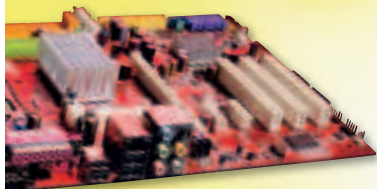


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PCFormat

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First review of ATI's X1950
CrossFire – yes, it *really* is
quicker than Quad SLI!

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Review and demo of
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*Just a small sample of this month's mega software & games collection

FLIGHT SIM X

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Hard drives



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Finally Quad SLI is here, but how does ATI's last X1000 series CrossFire-capable card cope?

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LEGO Star Wars 2

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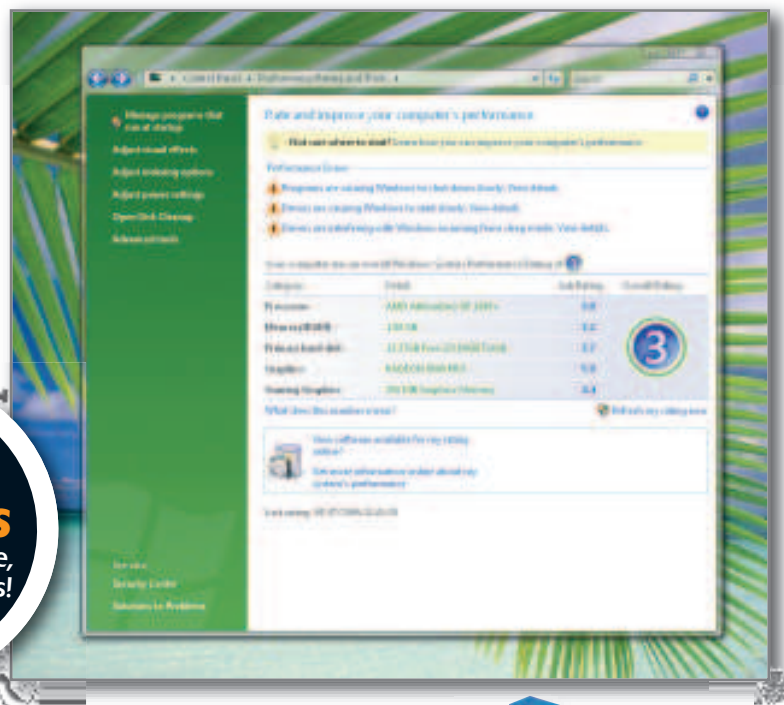
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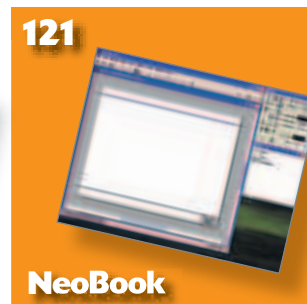


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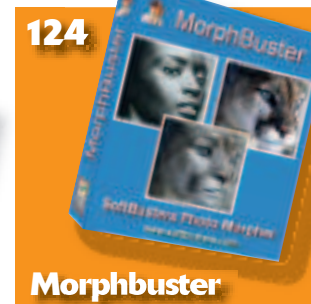
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This issue was brought to you by...

Editor Adam Oxford

Deputy Editor Alec Meer
Acting Art Editor Dave Partridge
Assistant Art Editor Alex Duce
Games Editor James Carey
Technical Editor Al Bickham
Production Editor Alex Jones
Technology Writers
Jeremy Laird, Luis Villazon
Staff Writers Dave James,
Mike Channell

Contributors Mike Abolins,
Rich Cobbett, Tanya Combrinck,
Alex Cox, Karl Foster, Tom Francis,
Kieron Gillen, Geoff Harris,
Joe Martin, Oliver Mather,
James Morris, Jim Rossignol,
Quintin Smith, Tim Stone,
Richard Stevenson, Andrew Sutcliffe
John Walker
Picture Editor Sarah Kennett
Cover Photography
Philip Sowles
Cover model Fleur Rooose @ MOT
Make-up, hair & clothes styling
Ami Penfold
Photography Andy Short,
Joby Sessions, Simon Lees,
Neil Godwin, Philip Sowles
Design and Production Kay Inglis,
Anna Fisher
Illustrations & image manipulation
Kevin February, Chris Garbutt
Disc Editor Jeremy Ford
Site Editor Chris Lloyd
Software Copyright Co-ordinator
Sarah Williams

Publishing Team

Group Publisher Stuart Anderton
Group Senior Editor Nick Merritt
Group Art Editor Ian Miller
Publishing Director Dom Beaven

Advertising

Tel 01225 442 244
Fax 01225 732 282
Advertising Manager Steve Grigg
Display Sales Danie Ward, Chris
Thom, Paul Guest, Dianne
Clydesdale, Mike Pyatt
Classified Tim Weeks, Matt Bailey

Marketing

Marketing Manager Fiona Tully
Marketing Executive
Jennifer Wagner
Overseas Licensing Tim Hudson

Production

Production Manager Diane Ross
Production Co-ordinator
Craig Broadbridge

Customer services

Subscriptions Manager
James Greenwood
Tel 0870 837 4722

Contact us
pcfmail@futurenet.co.uk
30 Monmouth Street
Bath BA1 2BW UK
Tel 01225 442 244
Fax 01225 732 295
Web www.pcformat.co.uk

Subscribe

Tel 0870 837 4722

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Tel 0870 837 4773

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PCFormat

Welcome

One of the joys of working on PCFormat is that there's always something new to look forward to.

With the exception of Microsoft's unwieldy Vista development team, there's not an R&D group in existence who – when pushed by unexpected opposition – can't pull out the stops and bring forward a launch date by a good few months. This constant battle for technical superiority between Intel and AMD and NVIDIA and, well,

AMD too keeps being a commentator on this vibrant industry fun.

The only thing better than an Earth-shattering event like the launch of Intel's Conroe, then, is the exchange of fire that follows. AMD's riposte is 4X4 – two AM2 chips in one machine – which will be appearing sometime in the next couple of months, rather than next year. Intel's follow-up was to declare that Kentsfield – it's quad-core version of Conroe – will not

be with us next Spring, but on the shelves by next Christmas. And with quad-core technology comes some genuinely exciting opportunities to play around with home virtualisation and single PC setups.

Enjoy the issue

Adam Oxford, Editor



Alec Meer,
Deputy Editor

Despite a lack of top-tier games this month (the well-received *GTR2* deemed uninteresting the by non-petrolheads on the team), it's been upgrade silly season on PCFormat. Alec and AI both have gone for dual-core Athlon 64s and an X1900XTX, while others favour the Core 2 Duo and SLied GeForce 7900s path. The fruits of our labours were then put thoroughly through their paces... on the six year-old *Crimon Skies*. Huh. **Achievement of the month** Overseeing his first PCF covershoot. He only told it to rub the lotion on its skin or it gets the hose again once.



AI Bickham,
Technical Editor

It's been a musical month for our technical hillbilly. When not driving the rest of the team up the wall with his banjo rendition of bluegrass standard *Cripple Creek*, AI's been making the latest high-end cards sing their lungs out on the Conroe test-bed. 160FPS in *Half Life 2: Episode One*? It can only be the X1950XTX. Turn to page 60 for the skinny. **Achievement of the month** Placing second in his first game of *Defcon*. Office-based intercontinental destruction rocks.



James Carey,
Games Editor

James has been AWOL for much of this issue, surfing in Cornwall and Norfolk on his hols. Come to think of it the games section is looking better than ever in his absence, with *GTR2* and *LEGO Star Wars 2*

performing so well. Not *directly* thanks to Dave James' tireless graft, admittedly, but still...

Achievement of the month Building a USB guitar for open source *Guitar Hero* clone *Frets on Fire* from a kids' toy and a joystick. More next month.



Jeremy Laird,
Technology Writer

This month's highlight for PCF's self-appointed teacher, preacher and heavenly creature? The exquisite torture that is installing Windows XP on five recalcitrant motherboards. Invisible SATA drives, petulant memory controllers and ballsed-up BIOSes are just a handful of the delights on offer. Never, ever

again! The really big news is the arrival of yet another, slightly less elderly BMW. Happiness truly is six cylinders of twin-cam, variable valve-timed German engineering.

Achievement of the month Stoicism in the face of yet another battle with a hopelessly convoluted BIOS upgrade procedure.



Frontend

THE BEST OF THE MONTH IN COMPUTING

Eye Candy Media marvel

This HDMI-ready media centre plans to swallow all the other boxes under your telly with one considerably weightier one. Near-silent running, a stylish case and enough grunt to shift HD video make the Vaio VGX-XL100 a desirable machine. The case has room for upgrades, too. www.sony.co.uk

Under the hood

CPU 2.8GHz Pentium D
RAM 1GB PC4300 RAM
Storage 250GB HDD
Optical DL-DVD writer
3D card GEFORCE 6600
Extras AVerMedia
AverTV and FM tuner
wireless keyboard,
mouse and remote

Remote access

Media Centre PCs are all well and good, but if it's sheer gaming punch you want (and – let's be honest – it is) then the ATI X1950 may be the answer. It's the most powerful single core card around, and chews up the higher resolutions with ease, but can it beat the twin cores of the NVIDIA 7950? Turn to p60 now to find out.

Hard sell

Many of us fixate on the capacity of a potential hard drive purchase, but there's more to them than mere capacity. Luckily, Dave James has made sense of it all on p104.

The big screen

This gorgeous Asus widescreen panel is the perfect way to play the fantastic *GTR2* (reviewed on p90). SimBin's spectacular 700HP monster is easily the best racing game available and even if you don't have the talent of a Mansell or a Senna, you'll still enjoy the stunning cars, beautiful scenery and life-endangering speeds.



AMD bags ATI

Quick fix

There you are rattling away at your keyboard without a care in the world when all of a sudden a thin wisp of smoke comes from under the DVD tray. Rather than panicking, wildly flailing your arms and rifling through the phone book to find the number for 999, simply flick to p40 for what to do when disaster strikes.

Fathoming the fall out: The end of GPU and CPU mix and matching?

The recent news that processor manufacturer AMD intends to acquire Canadian graphics goliath ATI in a deal worth \$5.4 million may have been expected in some quarters, but it was still rather shocking to most observers. At a stroke, the four pillars of PC processing (Intel, AMD, NVIDIA and ATI) have become three.

The theoretical benefits for AMD, of course, are obvious enough. Firstly, the deal will deliver a full range of PC

platforms to take on Intel's finest, complete with a line of home-grown chipsets to support AMD processors, as well as integrated graphics technology. Crucially, it should finally provide the PC processor industry's perennial underdog with a viable competitor for Intel's all-conquering Centrino mobile platform. If that's the short-term upside, the benefit of the deal should be a shoo-in to other markets, such as set-top boxes, and the sector expected to be

**top
stories**

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BETAS METRED
MS charges for
unfinished apps

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PASSPORT PERIL?
Hackers expose
ID flaws

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E3 RIP
Industry bunfight
is no more



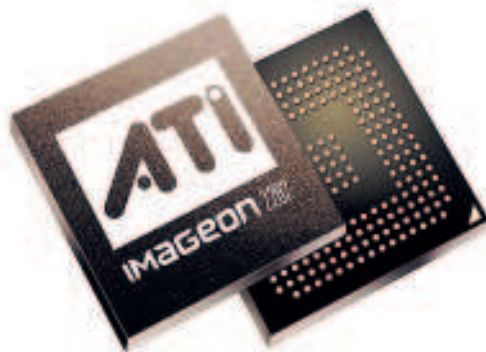


Alec Meer
RELUCTANT RIG RAGGER

The perils of wilful miserliness revealed...

Inspired by last month's fancy talk of overclocking, I felt the time was right to try and squeeze a slightly faster heartbeat out of the dusty Athlon 64 3800+ in my home PC. It'll be replaced before the year's out anyway, so I thought dramatically reducing its lifespan or killing it on the spot was no great risk.

I didn't even make it that far, my penny-pinching ways precluding me from reaching the giddy heights of 2.5GHz and above. Desperate in earlier, more naive months to scale the 2GB memory mountain, I'd plumped for Value RAM. A third cheaper than the good stuff, and a mere fraction of the cost of overclock-friendly ultra-RAM. And, of course, totally unsuited to any sort of frontside bus tinkering, the system either hanging during Windows boot or not even POSTing if I added more than 15MHz. To add insult to injury is the fact that I'm in exactly the same bind in my work PC, running cheap-ass DDR2 alongside its 3.4GHz Prescott P4. My colleagues are congratulating themselves on their framerates, and I'm left holding the CMOS reset switch – all because I wanted to save myself £20. Bah.



the next cash cow, mobile phone handsets.

For ATI, the upside is less obvious, and largely revolves around long-term security and manufacturing capabilities. Financially, the Canadian outfit has been off-colour of late. Partnering with AMD should enable it to pour more cash into its crucial R&D operations and hence develop even better products for the future. What's more, AMD's chip

foundries can begin cranking out video chips, potentially handing ATI a big advantage over NVIDIA in terms of process technology. And if the integration of CPU and GPU functionality into a single chip ever materialises, who better than the newly merged AMD-ATI operation to pull it off? As AMD's head honcho Hector Ruiz pointed out when he presented the great news, "visual

All together now?

AMD and ATI's agreement could make the stuff of Jeremy Laird's wildest dreams – an all-singing, all-dancing all-in-one graphics processor and CPU chip more plausible. Don't hold your breath, though. Sony is struggling enough just getting the Cell chip to perform as expected.

computing is playing a larger role in what we are doing, going forward." Time, therefore, for much rejoicing. Right?

Possibly not. For starters, the shareholders of both companies as well as anti-trust authorities on both sides of the US-Canadian border must first rubber stamp the deal. The deal will also do nothing to prevent AMD from taking a nasty beating on the desktop from Intel's horrifyingly fast Core 2 Duo chips over the next 18 months. If anything, it will only serve to distract management and consume precious resources at a tricky time for AMD. And the idea that AMD will begin banging out ATI graphics chips from its foundries when it can barely keep up with demand for its current processors is pure fantasy.

But most significantly of all, it's far from clear that consolidation of this kind is going to be good news for

the people who really matter in all this – the end users. At best, the upside for Joe Public is a bigger, stronger, more competitive AMD. One that's significantly less likely to get killed off by a single, lame-brained blunder. Greater integration of CPU and graphics processing technology might also bring cost benefits to low-end PCs in a few years' time (real-world performance benefits from such an approach are much, much further out).

However, the downside is the prospect of an unseemly turf war, with AMD and ATI on one side and Intel on the other, perhaps in an alliance with NVIDIA. In this worse-case scenario, the ability to mix and match CPU and GPU vendors, an option which until now PC users have taken for granted, could come under threat. Indeed, that process has already begun, thanks to the closed shop that is NVIDIA's NFORCE-only multi-processor technology, and the likelihood that the successor to Intel's 975X chipset will eventually drop CrossFire support.

After all, how can Intel financially support a rival's graphics tech? Thanks to Intel's Core 2 Duo, it's also easy to imagine NVIDIA making SLI an Intel-only party. In the immortal words of Butthead the Great, that would totally suck, more than anything has totally sucked before. **PCF**

"At best, the upside for Joe Public is a bigger, stronger AMD"

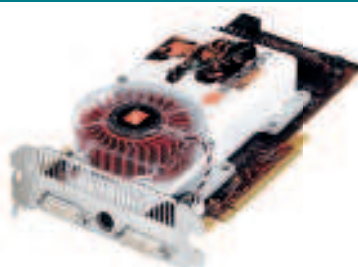


AMD and ATI's link-up has many consequences for PC gamers.

Thinking outside the box

Could ATI's next premium pixel pusher come in an external box?

Fact and fiction are promiscuous bedfellows on the internet. You could be forgiven, therefore, for mistaking images that did the rounds on the usual tech-orientated tittle-tattle websites of a next-generation graphics solution from ATI built into an external box for the real deal. Such a beast is possible as an alternative form factor for portable systems. But make no mistake, ATI's upcoming R600 will be available as a conventional internal desktop video board. Just don't be surprised if it requires its own external power supply unit.



THEY SAY

"The acquisition of ATI by AMD is positive. We are now the only graphics processor company that supports Intel and AMD processors." Derek Perez, NVIDIA's marketing guru.



We knew laptops got hot on occasion, but this is plain ridiculous.



Hot hardware

Laptops have taken to bursting into flames

We're all used to the cosy glow of a notebook on our laps. Unfortunately there seems to be an increasing trend in portable PCs spouting sheets of flame and making loud popping noises. These pictures, first shown on www.theinquirer.net, show how spectacular the results can be. So far the culprits appear to be primarily Dell models, and the web is now rife with pictures of the firm's laptops boiling holes in themselves.

Particularly unfortunate victims were Thomas Forqueran and the implausibly named Rod Riddle, who

were away on a fishing trip when Forqueran's Dell Inspiron self-immolated in his truck. That freak occurrence would usually be enough to put a damper on any day out in the countryside, but the fact that the pickup was chock-full of live ammunition (no fisherman should be without it, clearly) meant Messrs Forqueran and Riddle were forced to high tail it in the opposite direction dodging flying bullets.

The cause appears to be manufacturing problems with the batteries on certain models and Dell has initiated a recall of an enormous

four million batteries. All Dell owners are advised to check their systems at www.dellbatteryprogram.com. "At Dell, customer safety is a top priority. Dell has always taken whatever steps necessary to deliver safe and reliable products," a Dell spokesperson explained to us. "All incidents are treated very seriously, and Dell is currently working with those involved to establish the cause of the problem. In the cases referred to, it has immediately engaged with the customer and initiated an investigation which is still in progress at this time."

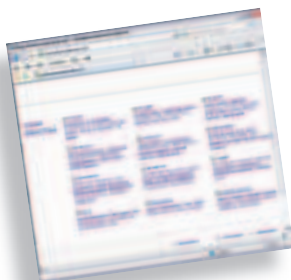
Squat's the difference?

National typo pillaging from Cameroon

Well it's not like we haven't seen this before. We all know what happens when we mistype a URL, we end up at www.hotmal.com and are faced with a bunch of adverts for spam filters. We're unsure whether anyone ever clicks the links that they've been conned into viewing though.

However, an entire country has gone into the business of 'typo-squatting', as Cameroon hands over its

top-level domain extension, .cm, to web advertisers. Accidentally omit the 'o' in almost any .com address and you'll be hastily bundled off to a banal links page. Some companies,



including Yahoo! have even had to buy the relevant domain themselves in order to block the exploitation. Clearly this must be a goldmine for the operators of Cameroon's web presence and its government, but we find it highly amusing that an entire country would ignore and compromise its national online identity purely to make a quick buck. **PCF**



FACT!

Death is no escape from the RIAA. After defendant Mr Scantlebury died, it moved for a 60-day stay to allow the family to grieve, after which it plans to enjoin his kids.

TIME STARVED

Quick ways to entertain yourself

1 WORKSHY DOSSERS

Using *Work Friendly*, you can make your boss believe that you're diligently running the rat race, while you're actually shirking your pants off.

www.workfriendly.com

2 TOWER BLOCKS

It's *Tetris*, but in three dimensions. Be warned though: you'd better plug your ears because your brain'll be looking for a way out.

www.3dtris.de

3 SMILES ALL ROUND

Nice to know Microsoft is dedicating its resources to researching the important issues. Here is the origin of the first ever smiley. It makes us feel :-].

tinyurl.com/7nep

4 AERIAL VIEW

Goggles is a flight 'sim' based on Google Maps. You fly a little plane around various areas of Google's aerial photos, including London, New York and Tokyo. Neat.

tinyurl.com/n7zsh

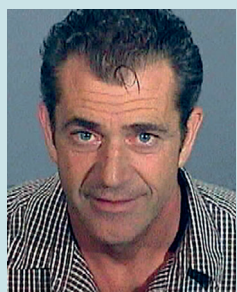
5 SNAKES ON THE BRAIN

The movie that could yet become a hit thanks to the online community that's sprung up around it, *Snakes on a Plane*, is the inspiration for a film title contest. We liked *Tarantulas on a Hovercraft* in particular.

www.blanksonablank.com

© Emptics

WHO IS... Mel Gibson Actor & Director



Wait a minute... I know this guy...

Well that's hardly surprising, he's a bit of a familiar face in Hollywood. You might recognise him from such blockbuster hit movies as *What Women Want*, *Mad Max*, *Lethal Weapon* and *Braveheart*. Not forgetting 2004's controversial *Passion Of The Christ*, of course.

So... it was PCFormat that I picked up off the shelf wasn't it? Have I accidentally grabbed a copy of *Heat* at the same time or something? Well, the reason Mr Gibson is in such a monumental cartload of manure at the moment is because the anti-semitic and sexist comments he is alleged to have made to police officers have been made available to the public. The case was under investigation by LA police, when the ever-outrageous internet stepped in. Entertainment site TMZ.com posted four pages of a leaked report which detailed what it termed a barrage of "anti semitic statements." Yet another celeb undone by the web.

The rise and fall of Kazaa

The world's favourite P2P client bites the bullet and goes legal

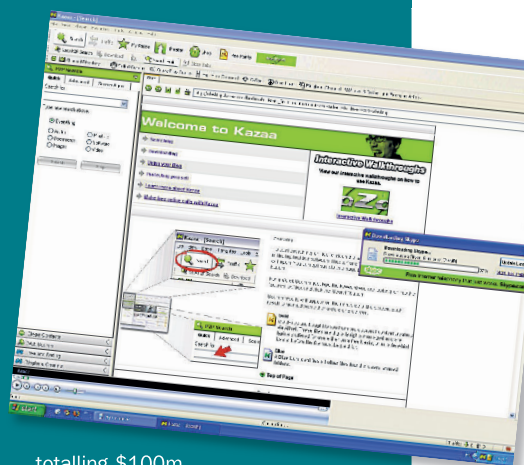
This story is as old as the hills. Or at least, as old as Napster going straight after the legal battering which closed it down. The music industry's relentless lawsuit-filing against peer-to-peer client developers may be a ponderous, precedent-setting, incalculably costly process, but it's starting to work in earnest.

Designed by the Dutch developer Consumer Empowerment (latterly the architect of Skype), Kazaa was the major second-

generation P2P client, and one that, after its launch in March 2001, got the world filesharing in earnest. The problem was, Kazaa landed Consumer Empowerment in court almost immediately. Rightly smelling trouble, CE sold Kazaa to a conglomerate known as Sharman, which of course found itself in and out of court for the next five years.

Last month, it all came crashing down as Sharman bent under the weight of a fresh onslaught and agreed to pay out-of-court damages

totalling \$100m (£53m) to Sony BMG, EMI, Warner and Universal. In addition, Kazaa is now fully legal, as it only allows the sharing of premium, pay-per-download media from official content providers. Kazaa, as we knew it, is dead – and depending on your viewpoint, that's either a good or a bad thing. It was, after all, wriggling with malodorous spyware.



Kazaa: A history...

March 2001
Kazaa launched by Consumer Empowerment.

January 2002
Kazaa sold to offshore conglomerate Sharman.

September 2003

RIAA successfully sues several Kazaa-using filesharers. Sharman responds by filing suit against RIAA, alleging that its terms of network use were violated by the RIAA and unauthorised P2P client software was used during the investigation.

July 2006

Sharman settles lawsuit with RIAA, paying \$100m (£53m) out of court to four major labels, and Kazaa becomes legal music download service.

November 2001

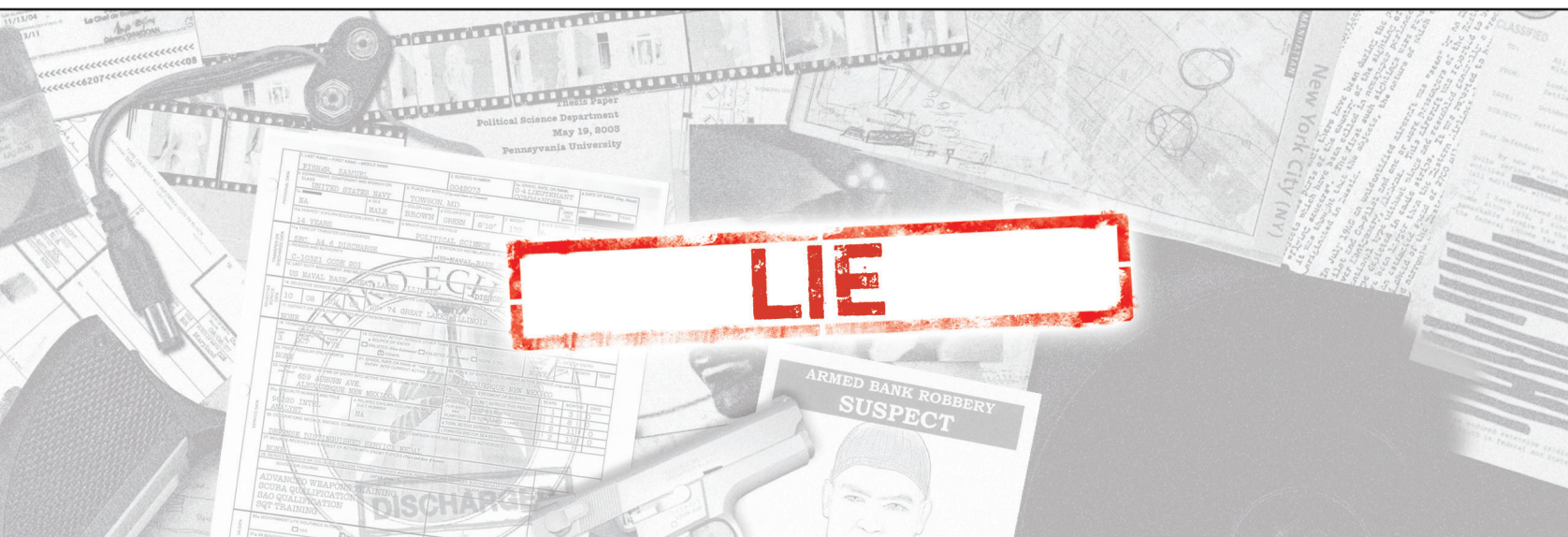
Dutch courts order Consumer Empowerment to prevent users from illegal sharing.

March 2002

Court of appeal rules that Kazaa is not responsible for the actions of its users. Sharman then sued by RIAA and MPAA regardless. The case is still pending.

September 2004

Australian Recording Industry Association (ARIA) wins landmark ruling; court finds that Kazaa 'authorises' users to infringe copyright by filesharing. Software subsequently modified for Australian users.



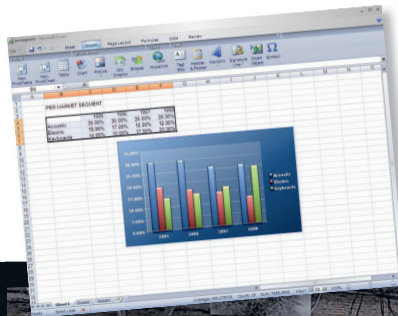
Microsoft short on cash?

Introduces 'cost recovery' measures

Public beta software was originally used to test for bugs. Now, it's a big free software party – no-one's interested in putting it through its paces.

Microsoft says the decision to charge \$1.50 for the Office 2007 beta 2, is a 'cost recovery measure', and that it's not a habit MS intends to keep. PCF is torn – we're not comfortable with MS having another vein from which to bleed PC users dry, but equally most of those

downloads aren't helping to make the software any better. At the same time, MS is using early software to encourage more purchases of the final product.



FACT!

Swindon is apparently the broadband capital of the UK, with over 50% of households sitting on a fat pipe. Eilean Siar in Scotland is the town with the least, at under 13% uptake.

Woot

Crimson Skies Revisited in this month's Restart (see p138), it remains the most fun we've ever had in a flight sim. Oh, for a pixel-shaded remake.

Ubuntu

PCFormat's long-time fave Linux distro is officially The Next Big Thing. The blogging elite are switching to it from the now too-popular-to-be-cool Apple OSX. Luckily you lot will have made the switch ahead of them, after trying it on last month's disc, right?

War games

Playing at soldiers for positive gain

With world events as they are, games based around the military can't help but garner more attention than usual. One such game that has been called up for duty is *Full Spectrum Warrior*. Pandemic's sim is being used to help soldiers returning from Iraq to treat post-traumatic stress disorder. Doctors at the Virtual Reality Medical Centre in San Diego hope that replicating the campaign's traumatic events in a safe environment will help the veterans recover and in some cases return to the battlefield.

Meanwhile, one person is using the US military's *America's Army* to make a statement about the war in



the Middle East. Joseph DeLappe logs into the game under the name Dead-In-Iraq and types out the names of servicemen and women killed in action during the protracted conflict.

Responses from actual players vary, but DeLappe's intention is to provide "an online memorial to

those personnel who have been killed in this ongoing conflict. [It is] also intended as a cautionary gesture." Frankly, turning the tide against what has been somewhat of a PR golden goose for the US Army is a near impossible task, but we applaud the statement it makes.

www.delappe.net

Games biz whining

Piracy is destroying PC gaming, says id Software co-owner Kevin Cloud. So do something about it – online distribution, à la Steam or MMOs, is the way forward all you publishers out there, not StarForce, please.

Dodgy mockups

For any rumoured piece of kit – like the Microsoft Zune – some joker will knock up a woefully inaccurate render-guess, only for the entire internet to then pick it up and mindlessly pass it off as the real thing. Enough!

moot



Sam Fisher

D2334223424

Feb 5, 2008

Halo's big screen hello

A decent videogame adaptation at last?

The first details on the Peter Jackson-endorsed big-screen version of *Halo* have recently been revealed. And it's being directed by the dude behind that Citroën advert with the ice-skating robot in it. Hmm.

What's really interesting, though, is that that advert would be nowhere near as renowned as it is if it weren't for the internet – multiple hostings on YouTube and a myriad of breathless blog posts brought it to the world's attention. Director Neil Blomkamp also found internet fame for his fascinating online short movie, *Alive In Joburg* (download it from www.archive.org), which details the struggle of alien refugees in South Africa. Without the internet's help, would this guy have landed such a huge gig for his first feature film? There's echoes of the *Snakes on a Plane* saga; a film that earned its huge profile and underwent major changes almost entirely because of a rabid online fanbase's constant wittering. Due for release a year after the Vista-only *Halo 2* on PC and *Halo 3* on Xbox 360, there's a lot riding on the movie version. While recent (and universally terrible) videogame adaptations have taken b-list titles (*Bloodrayne*, *Silent*

Hill) or floundering franchises (*Doom*) as their source, *Halo* remains huge. And the Peter Jackson/WETA association means making a flop is not an option. Blomkamp's initial interviews have promised he'll be faithful to the source material, hinting that the epic ringworld of the first game and the menacing Flood will appear, but sadly he's yet to rule out the Master Chief's face being revealed – oh God, don't let this be redolent of that monstrous Sly Stallone *Judge Dredd* cinematic débâcle all over again...



YouTube saves/kills TV

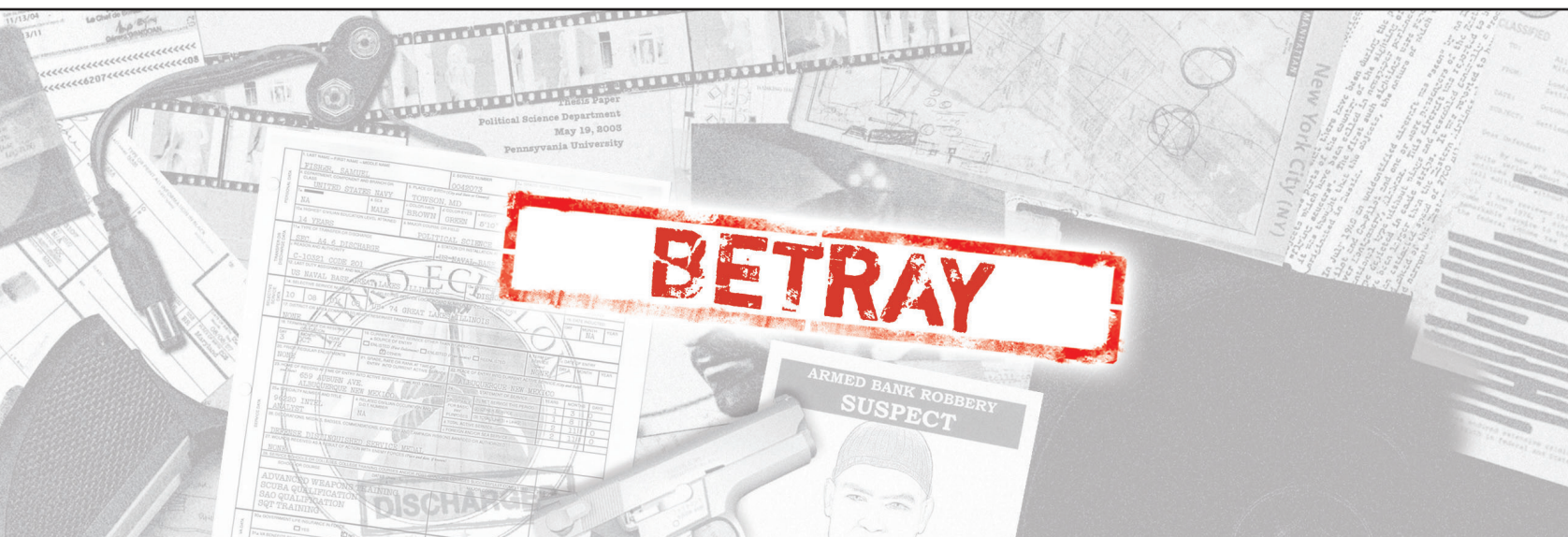
Online video clips for all

This this year's Blogspot/Flickr/Myspace is YouTube, and it intends to eat your television. Or at least that's the prescribed wisdom about the site, a free-for-all video clip repository that's currently the world's favourite online destination.

YouTube's refreshing 'anything goes' philosophy may be as good as it is fatal for broadcast TV, though – a failed pilot of a new US sitcom was dumped onto YouTube recently, only to be watched by thousands and commissioned for a TV series as a result. Of course, it helps that the show, ironically named *Nobody's Watching*, is from saccharine but wildly

successful sitcom *Scrubs'* creator Bill Lawrence, so there was a huge fanbase already there to champion it. But nevertheless, it's proof of that the web is an incredibly potent marketing tool – we can fully expect to see YouTube, Google Video et al used as sampling grounds for more new shows as a result. www.youtube.com

"YouTube's effect may be as good as fatal for broadcast television"



Update: hacking Vista

New operating system already compromised



Vista's Chocolate Teapot, sorry, Windows Defender doing its increasingly futile thang.

Passbork

A wily hacker has already cracked the biometric passport



Even before Tony and chums have managed to persuade the British public that biometric identification is anything but a horrible violation of civil liberties, a cunning chap at the Defcon convention in Las Vegas has managed to duplicate the biometric data. As if people needed any more

convincing that the £415m plan is an utterly ridiculous waste of tax payers' money.

German security consultant Lukas Grunwald has demonstrated how to rip the data from passports and clone it to another chip, which could then be inserted into a fake passport. The Home Office claims, meanwhile, that while the data can be duplicated it can't be altered.

Last month we reported on the undetectable Blue Pill malware that can seize control of Vista. hilariously, Microsoft took a day at the Black Hat security convention in August to bang on about how safe its next Windows is, only to have it summarily torn apart afterwards by Joanna Rutkowska, the security researcher behind Blue Pill, who we mentioned last issue. She was able to install unsigned drivers in Vista, something Microsoft had claimed was impossible.

The exploit, achieved by nipping under the fence via the page file, is bad news, because malicious software could bypass the OS' security in the same way. Rutkowska also demonstrated Blue Pill in front of Black Hat's wildly applauding audience. "The fact that this mechanism was bypassed doesn't mean Vista is insecure. It just means it's just not as secure as advertised," she announced.

Of course, Microsoft will have a go at fixing the holes (Rutkowska even suggested a few ideas to plug the security breaches she found) but it's certainly more negative PR for the oft-delayed Vista. Though PCF is far from a staunch supporter of Vista, we're now at the stage where we just want the thing out there, come what may, rather than giving Microsoft yet another reason to withhold it further.

90%
STAT!

The percentage of UK web users that take precautions against online threats. Good to see that people are becoming sensible online. Now, if only they'd stop wittering in chatrooms...

BEST OF THE PCF BLOG

Hit blog.pcfmat.co.uk for a daily squirt of our brain juice direct to your home PC

Major fault

Check the August archive for an example of some of the hair-raising driving 'techniques' we employed on our way to a full review of GTR2 (p90). The PCF driving school is accepting new drivers (and instructors) now...

IPCf

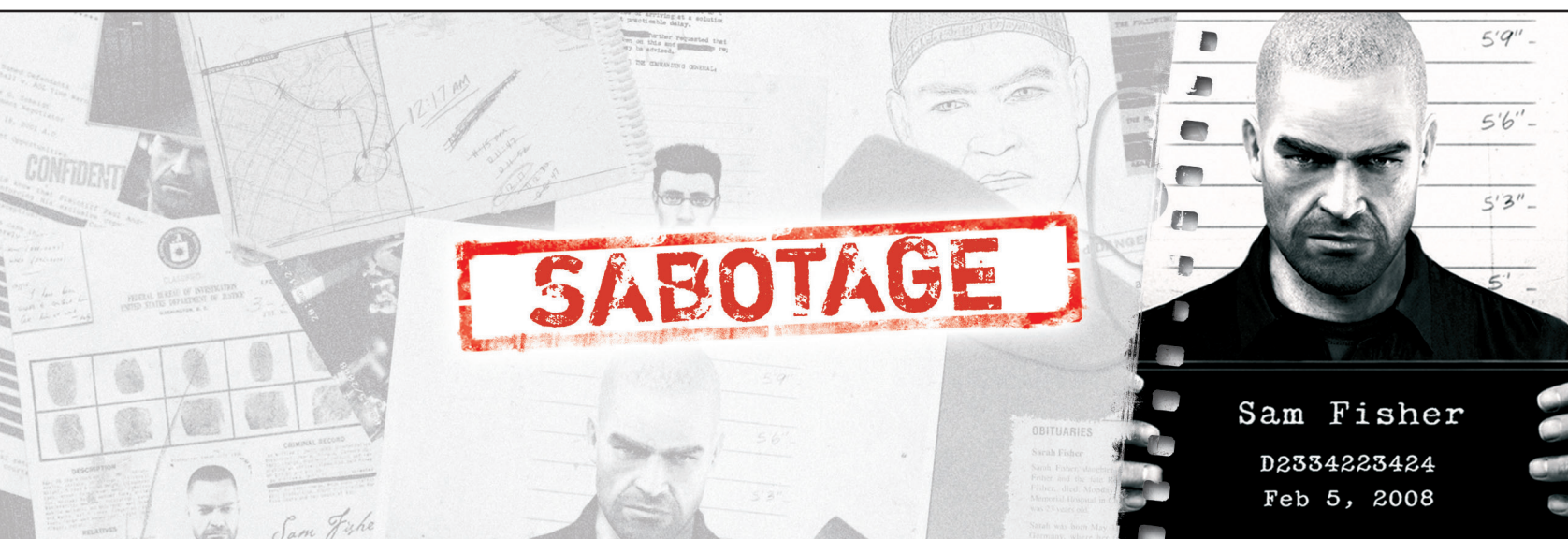
Alec spent some time musing on the subject of what it takes to make an iPod beating MP3 player, what with the new Zune on the way. His answer? Sex, amongst other things. Don't worry, we don't let him out often.

Build a bomb

Al, meanwhile, has been totting up the figures to find the best bargain PC he can. He came up with a rig that includes the entry level Core 2 Duo chip, an XFX 7950GX2 and a gig of RAM. With a few extra bits, you'll have a box that goes like stink but won't frag your wallet. Full details here: tinyurl.com/nmtst. According to the tech monkey himself, "there really has never been a better time to upgrade."

Axeman cometh

Our Carey's made a custom USB geetar controller for the open source Guitar Hero clone, Frets on Fire. See it in action on the blog...



Zune to be released

Microsoft finally squares up to the iPod

The moment the anti-Apple brigade have been waiting for is here. In a better-late-than-never entry into the MP3 player market, Microsoft has announced the Zune, a carpet bomb-style attack on the iPod, its features and, most spectacularly, the all-conquering iTunes backbone. It even comes replete with a typically impenetrable viral website at www.comingzune.com.

So what exactly does the big M have up its sleeves to wrench the white headphones from the world's lugholes? Well first of all, Zune doesn't just refer to the devices themselves, but also to a music service that's very similar to iTunes. So similar in fact that, according to reports, Microsoft plans to buy out your iTunes account, by scanning the program and allowing you to download any songs you bought from Apple's competing service for free. While it may sound like a cheap way to attract customers, bear in

"The emphasis is to encourage sharing artists and songs"

mind Microsoft still has to pay the owner of the rights to each song, in what would be a loss-leading strategy to convert hardened iPod devotees.

The emphasis with Zune is to encourage sharing of favourite artists and songs between its users. The player will have WiFi built in, but as yet it's unclear whether actual files can be transferred from between devices, or whether you'll only be able to share links to the songs on the Zune music store.

We'd be inclined to believe that, in the rights management-hobbled world we currently live in, it'll be the latter – perhaps the best we can hope for is the ability to 'borrow' a song with a DRM timebomb attached. While music is the initial target for MS, the Zune service is expected to expand into film downloads and, if the rumours to be believed, eventually portable gaming.

Frankly, we're glad that Microsoft is weighing into the lucrative MP3 player market.



Mean anything to you? Yet another bizarre viral website...

After all, Apple's continuing domination can only be a bad thing for consumers. Besides, the Zune seems, superficially at least, to be 'different' enough in execution to the iPod to succeed in the marketplace once launched. After all, with Microsoft's research and development millions behind it, the machine surely won't be short of publicity. We hope for a receptive marketplace that can allow the two rival formats to coexist alongside each other in glorious harmony, but you never know – that may not be the case.

E3 RIP?

The end of an era?

Once a year, the world's major game developers, publishers, distributors, hardware manufacturers and thousands of sweating, corn-fed American teens converge on the Los Angeles convention centre for the biggest event in the games calendar: E3. For the last 12 years, E3 has been a watch-word for breaking games news, clandestine deal-making and colossal, weapons-grade piss-ups.

However, due to its burgeoning girth and swelling attendance list, it's no longer the useful event it used to be for industry types. For example, this year, the queue for the Nintendo Wii stand (yes, it's still funny) was over two hours long, meaning many journos didn't even get a look-in. The other key problem for developers is that every year, a flashy and polished E3 demo needs to be completed, which disrupts development cycles and makes hitting the all-important milestones exceedingly difficult.

As a result of rumblings from both exhibitors and attendees, the show will be pared down. Attendance will now be by invite only, with an estimated 5,000-7,000 attendees, compared to this year's 60,000. The upside will be greater intimacy; the downside, smaller developers will struggle to get in and show off their games, and the general public won't get so much as a whiff of the event. Whether it's a good idea or not, the show will certainly be a shadow of its former self.



NEWS IN BRIEF

War rocketing

One of the least sensible schemes to come out of this year's DefCon cracker convention is firing a WiFi-enabled rocket 50 miles through the sky in under a minute, getting it to log every wireless network it comes into range of during its journey.

Remaking news

Reuters has withdrawn almost 1,000 photographs supplied by a freelance photographer, after it was discovered that he had blatantly doctored some of his pictures of the ongoing conflict in Lebanon. Maybe you should get someone from b3ta to help you next time, mate?

Apple vs Vista

The next iteration of Mac OS X has been revealed. It's known as 'Leopard', and it includes full 64-bit support and a Time Machine feature that can reportedly restore any version of any file. Apple's marketing has already proclaimed Leopard to be 'Vista 2.0.' We shall see...

Girls online

The Eighties pop band that never quite went away, Duran Duran, has made an island in the MMO *Second Life*, from which it promises/threatens to perform online virtual concerts. By that, we assume they mean that 3D avatars will be synched to MP3s, then. Hmmm.

**183%
STAT!**

In the last year, ludicrously popular teen networking site MySpace has grown from 16,239 unique users to 46,025. That's a rise of 183%. We're gobsmacked.



Jeremy Laird
HAS A 1MS RESPONSE TIME

Potty pixel pushers: enough is enough...

In the unlikely event that you haven't noticed, please allow me to enlighten you to the proliferating problem of GPU power consumption. It all began with ATI's Radeon 9700 Pro. With eight pixel pipelines and a supplementary four-pin floppy drive power connector, it was arguably the first über graphics chip in the modern tradition.

NVIDIA then raised the bar with the 16-pipe, twin-molex socket gas guzzler, the GeForce 6800 Ultra. Today, a dual-card SLI or CrossFire rig requires a pair of six-pin PCIe supplementary power cables and a PSU capable of cranking out at least 500 Watts. In other words, the power consumption of current graphics solutions is spiralling out of control.

And it's going to get worse. Rumour has it ATI's next chip, the R600, will require its own external power supply. If true, I suspect that R600 will eventually become the Pentium 4 Prescott of graphics cards – the card that proved the industry's current approach is flawed. Brace yourself for technological u-turn followed by a barrage of pixels-per-watt PR puff some time in 2008.

Gearedup

THIS MONTH'S BEST NEW TECH

Wondrous widescreen



BenQ FP241W

Price £682 Available now Web www.benq.co.uk

Could this be it? The all-singing, all-dancing 24-inch flat panel that has it all? The PC monitor, in other words, that has what it takes to smack Dell's default-option 2407WFP upside the head? Well, there's no doubting the BenQ FP241W's on-paper prowess. It matches the big, bad Dell in terms of screen diagonal and native resolution (1,920x1,200 pixels). It also goes toe-to-toe with a wide range of analogue and

digital inputs, including DVI, VGA, component and S-Video, full support for HDCP-protected video content and a handy picture-in-picture mode. But crucially, it ups the all-round AV ante to the tune of one HDMI port. When it comes to connectivity, whether it's to a PC, set top box or virtually any other device, the FP241W absolutely, positively will not let you down. Here's hoping it has image quality to match.

Time to invest?

OK, it'll cost you the best part of £700. But then you get an awful lot of monitor for your money. And unlike a silly money processor or video, your investment won't be made to look utterly redundant inside 12 months.

Promising panel

BenQ's latest is powered by a new P-MVA (yup, that's P-MVA, as opposed to S-PVA) panel from AU Optonics. If it's anything like other MVA-type panels, colour, contrast and viewing angles will be out of the top drawer. It's pixel response and input lag, therefore, that will make or break this monitor.

Picture perfect

A contrast ratio of 1,000:1, brightness rated at 500cd/m², 8ms pixel response and HDMI connectivity. On paper, the FP241W is the monitor we've all been waiting for.



Multi-talented laptop

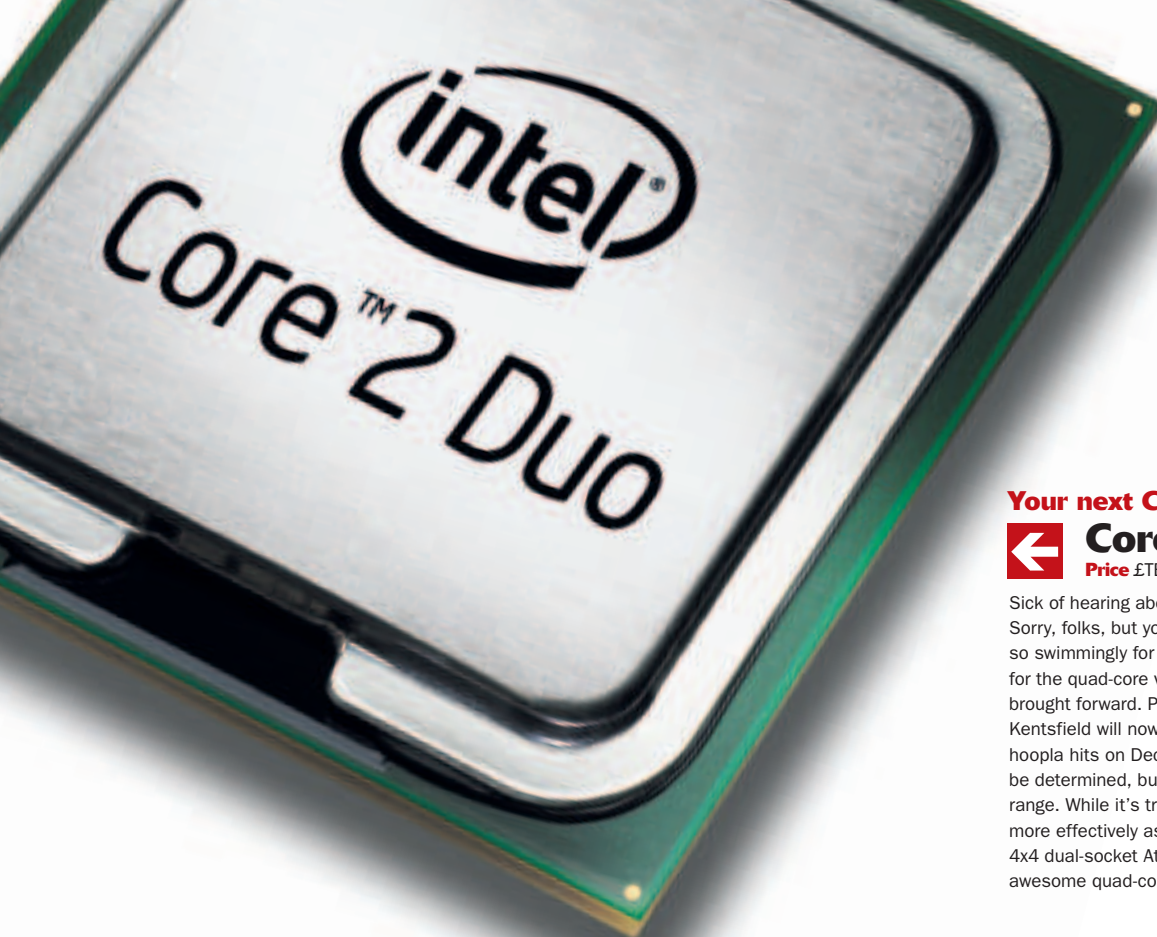


Toshiba Tecra M7

Price £1,099 Available Now Web www.toshiba.co.uk

Back-breaking, desktop-busting 17-inch notebooks are all very well. But if it's practicality and portability combined with real usability you seek, 13 and 14-inch lappies are where it's at. And gaming aside, this new Toshiba lap warmer could be one of the best yet. The killer feature is its high resolution 1,400x900 pixel 14.1-inch wide aspect touchscreen display. Not only does it offer significantly more screen real estate than the 1,280x800 masses, but along with the swiveling display hinge, it allows the Core Duo-powered Tecra M7 to sport full Tablet PC functionality. Only the rather rudimentary Intel GMA 950 graphics disappoint.





Your next CPU



Core 2 Duo Quad-core

Price £TBA Available Christmas Web www.intel.com

Sick of hearing about Core 2 Duo's Athlon 64-bashing antics? Sorry, folks, but you ain't seen nothing yet. Things are going so swimmingly for Intel's new killer CPU core that the schedule for the quad-core version, codenamed Kentsfield, has been brought forward. Previously pencilled in for early 2007, Kentsfield will now roll out sometime before the Hogmanay hoopla hits on December 31st 2006. Clockspeeds are yet to be determined, but expect something in the 2.66 to 2.93GHz range. While it's true that AMD's Hammer architecture scales more effectively as you add cores, it's unlikely that even the 4x4 dual-socket Athlon 64 platform will be enough to scare this awesome quad-core Core 2 contraption.

Sensible storage



Sandisk Extreme IV CompactFlash 8GB

Price £325 Available Now Web www.sandisk.com

Another month, another leap in flash memory storage capacity. Granted Sandisk's latest isn't quite capacious enough to banish mini hard drives to the annals of mobile storage history. After all, your average copyright-thieving, file-sharing digital music fan has a collection of MP3s far in excess of 8GB. Likewise, video of any kind eats gigabytes for breakfast. But you can still get an awful lot done with 8GB. No matter how many megapixels your latest digital SLR sports, this simply won't run out of space. And just think how many episodes of *Battlestar* or *The West Wing* you'll be able to squeeze on for that PDA-powered transatlantic jaunt. At 40MB/sec, the Extreme IV is also seriously nippy.



Core 2 Duo pwnd



Alienware Area 51-7500

Price £1,198 Available Now

Web www.alienware.co.uk

Frag-happy script kiddies of the world rejoice. For Alienware has released its latest high-end PC system, the Area 51 7500. Sadly for AMD fans, the 7500 has gone turncoat on the poor old Athlon 64, preferring instead to specify Intel's brave new Core 2 Duo processors. But that's predictable enough, given the superiority of Intel's new wonderchip in just about any game engine you care to mention. However, the biggest news is the arrival of an all-new Alienware chassis, the P2. The traditional swoopy plastic vibe remains, but the emphasis on improved airflow and a battery of multi-coloured mood lights are rather reminiscent of Alienware's in-house rival, the Dell XPS. Care for a spot of fratricidal sales cannibalisation, anyone?



PREVIEW BLU-RAY BONANZA

Drive time

➔ BenQ Blu-ray Trio Writer BW1000

Price £549 Available Now Web www.benq.co.uk

Oh, high definition video, why do you tempt us so? Though set-top box-bound HDTV services from the likes of Sky and Telewest are now in full flow, watching legitimate HD video on your PC remains infuriatingly out of reach in the UK. Of course, the reasons behind this piddle-poor state of affairs are complex. For starters, you need a PC with end-to-end HDCP support. And then you'll need some actual HD disks to watch. Oh, and some kind of HD optical drive with which to read them. All of the devices you see listed here should be available for purchase in Blighty by the time you read these words. But with both Blu-ray and HD-DVD's track record for delays and aborted launches, forgive us if we take that under advisement. For the record, then, BenQ's Blu-ray offering is theoretically yours for a whisker over £500 and crucially offers read and write capability for legacy DVD and CD disks as well as both 25GB single layer and 50GB dual-layer Blu-ray discs.



Three alternatives...

Sony BWU-100A

➔ Price £500+ Available September
Web www.sony.co.uk

Since Blu-ray is essentially Sony's bitch, it's a wonder that it's taken the Japanese giant this long to bring its own Blu-ray PC burner to market.



Samsung SH-B022

➔ Price £500+ Available September
Web www.samsung.co.uk

One of the earlier birds in the Blu-ray game, Samsung's SH-B022 is an old-school IDE drive and like others here boasts backwards compatibility with DVDs and good old CDs.



Pioneer BDR-101A Blu-Ray

➔ Price £580 Available Now
Web www.pioneer.co.uk

Pioneer dominated the early days of DVD burning, so safe to assume it will be a player in the Blu-ray. But probably not with this drive – it's aimed at 'authoring professionals', apparently.



ANALYSIS

TRANSITION COMPLETE: NEXT UP, WORLD DOMINATION?



So, that's it. Apple's move from dare-to-be-different IBM PowerPC technology to plain-as-anything vanilla x86 PC processors, courtesy of dowdy

old Intel is finally complete. At Apple's annual World Wide Developer Conference in August, the fruity faithful gathered to watch their hero Steve Jobs remove the wraps from the final Intel-powered pairing in Apple's product range, the Mac Pro workstation computer and the Xserve server unit.

For the most part, the long-anticipated new machines' technical specifications were, in the event, predictable enough. Apple's flagship desktop has long been available in twin-socket trim and that means only the Xeon flavour of Intel's new Core-architected processors will fit the bill. The new Mac Pro will be available in three different specifications – 2GHz, 2.66GHz and 3.0GHz, in each case in dual-processor (and hence quad-core) configuration. So despite persistent rumours of an Apple-only über-clocked chip being employed, the Mac Pro makes do with entirely off-the-shelf processors.

Similarly, the remainder of the system looks very much like a conventional workstation PC, complete with an Intel chipset providing dual 1,333MHz front side buses and, naturally,

PCI Express expansion. But now that Apple is buying in pure PC technology, it's actually the price, rather than hardware, comparison game that has become most intriguing.

Although it's impossible to spec up a Mac Pro and, say, Dell Precision workstation with exactly the same kit, you can get pretty close. And anyway you dice it, Apple's £2,239 asking price for a Mac Pro packed with a pair of 3.0GHz Xeons is a conspicuous bargain. Add in the fact that Mac Pro's motherboard can provide a pair of eight-lane PCI Express graphics ports and the prospect of the Bootcamp Windows-friendly dual-booting technology becoming an official feature of the next version of OS X (due out early next year) and you have the makings of the ultimate rig for style-conscious enthusiasts.

Surprisingly, the Mac Pro is now looking like good value for money.



Gameslatest

COMING SOON TO A PC NEAR YOU



Dave James
WHO THE HELL?

All the trips in the world are no match for maths...

Fear not people, I haven't done away with Mr Carey. I'm merely keeping his seat nice and warm while he suns himself in preparation of an Autumn stuffed to vomit reflex with a glittering array of barn-storming new games.

Like everyone else in the gaming world, I'm agog at the possibilities of *Portal*, particularly since our attempts at multiplayer portalising in the *Prey* demo this month. And yes, it is a truly mind-bending thing to do, but it's still not the most exciting thing to have befallen me this month.

Nor was it flying to Normandy in a 60 year-old plane, and then being escorted back to good old Blighty in time for coffee and cakes by a fully functioning Spitfire (check out blog.pcformat.co.uk for the archived video).

No – the most exciting event of September was the arrival of my code for the beta test of the latest edition of my beloved Football Manager. Now, some may find it sad that seemingly endless rows of stats can have such an effect, including my long-suffering fiancée, but I maintain its maths model is one of the most addictive things since Quake.

"Now, where did I put that rend in the space/time continuum?"

Portal Wars

Warp the very fabric of space itself with this season's must-have accessory

DUE DATE Autumn
PUBLISHER Valve
DEVELOPER Valve
WEB www.steampowered.com

Since Valve released its swollen package of trailers for *Half Life 2: Episode Two*, the world and its assorted companions have gone Aperture Science Handheld Portal Device nuts. The

Washington state. The original game, *Narbacular Drop* (www.nuclearmonkeysoftware.com), saw you helping helping Princess No-Knees (she can't jump) to escape a dungeon by controlling two interconnected portals. Valve then swallowed the team wholesale, and went

of *Prey*. While it is almost certain that this move was designed to steal the thunder of the long-delayed shooter, Nuclear Monkey had been working on the project for some time.

To ease 2K Games' worries, a modder has introduced the Portal Wrench as an alternative fire mode in *Prey*. It allows you to create connected portals within both the single and multiplayer games. The portal gun has also been patched into Garry's *Mod*, giving you access to the toy in a Source sandbox.

Considering the fact that the *Portal*

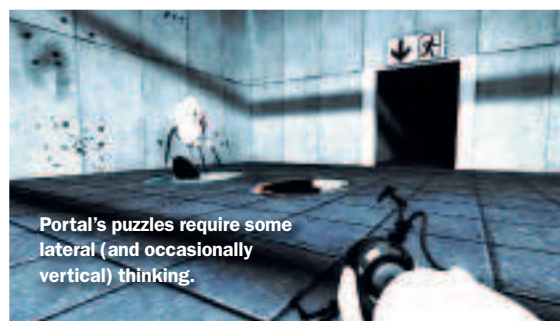
storm has only just started, and coders are already racing to get working mods up and running, you can bet your treasured rusty crowbar that we'll see a steady stream of clones over the next year or so.

"The portal gun has also been patched into Garry's Mod for Half-Life 2"

concept of *Portal* was spawned by a group of students called Nuclear Monkey Software, who attended the DigiPen Institute of Technology in

on to create the almost-sequel we know as *Portal*.

There has been some consternation about the release of the *Portal* video closely following the release



Portal's puzzles require some lateral (and occasionally vertical) thinking.

GOSSIP!

"I said that I'd developed a megatexture technology at 128,000x128,000 textures, so it's a pretty safe bet it's not a corridor shooter." John Carmack

Thank you for your co-operation...

Kane and Lynch, but no Abel

DUE DATE 2007 **PUBLISHER** Eidos **DEVELOPER** IO Interactive **WEB** www.eidos.co.uk

We don't get enough co-op on the PC, but *Kane & Lynch: Dead Men*, the new third-person action game from IO Interactive that's set to arrive early next year, could change all of that.

The story goes that Kane and Lynch are two

ageing men whose lives have taken a turn for the worse. They've both split up with their wives and they're both, um, on death row. The pair are then sprung by a mercenary group Kane stole some money from and the game has you hunting briefcases of cash all over the world through a series

of increasingly fraught, trigger-happy missions.

IO is putting a level of effort into the narrative that we almost never see in an action game, but that doesn't mean we should fear lengthy cutscenes. The developers want to tell a story as you play, which means lots of dialogue and

events during breaks in shooting, but you always retain camera control.

Combine all this with the high production values IO showed us with *Hitman: Contracts* and *Blood Money*, and things start looking really exciting. We'll have more about *Kane and Lynch* nearer its release.

in the pipeline

PCFormat's news wires are all a-twitch with the latest developers' whispers...

OCTOBER

Undercover: Operation Wintersun

Nazis and spies, it's all Boy's Own stuff here! All those fantasies about MI6 recruitment are at your fingertips as a British physicist press-ganged into the Secret Service and dumped behind enemy lines. www.undercover-game.com

NOVEMBER

Genesis Rising: The Universal Crusade

At first, glance this is a freakish-looking *Homeworld*. All set around a universe of genetic engineering, it's the strangely *Xenon*-looking giant spaceships that take centre stage. www.dreamcatchergames.com



Storm of War: Battle of Britain

It's *Their Finest Hour* all over again as Oleg Maddox, creator of the outstanding *IL2 Sturmovik* and *Pacific Fighters*, turns his hand to a new franchise. Hold back the Third Reich in crates of canvas and wood. int.games.1c.ru





Beta eater

Open season on betas!

Sometimes we do feel bad for you eaters out there, having only a finite number of secured keys to give you. If we could we'd give everybody the chance to get in on the latest beta tests, but that's not possible. Thrice huzzah then for that rarest of beasts: the open beta test!

We've scoured the web and uncovered some interesting tests going on right now. First off we've a post-apocalyptic nightmare of a game in **Ruin Online** (www.brokeassgames.com). The game isn't due for release for a year, but BrokeAssGames feels that getting the community established is vital. It's an MMORPG, but PvP-centric and set around a twitch combat system.

There is also the browser-based outing **Quantum Legacy**, a real-time strategy that is already gathering quite a community online. Build up your bases and let slip the dogs of war server-wide. Check it out at www.quantumlegacy.com.

And don't forget you can still sign up for secured beta test keys for the online universe that is **GalaxyLife**. All you've got to do is answer the question below and send your answer, together with your beta-test of choice, to betaeater@futurenet.co.uk.

What is the official name of our Sun?

a) Geoff b) Sol c) Fireball XL5



Quantum Legacy: No sign of AI or Sam Beckett yet...

Galactic Civilisation II: Dark Avatar

The expansion pack to *Gal Civ II* is promising all the usual improvements such as extra campaigns and custom races, but the big story is that it's all coming from within Stardock's own new publishing wing. www.galciv2.com/darkavatar



Point, click and pray

The *Broken Sword* franchise returns with more religious intrigue-soaked drama



DUE DATE Autumn **PUBLISHER** THQ **DEVELOPER** Revolution Software **WEB** www.broken-sword.com

For a while everyone was harping on about how point-and-click had suffered an ignominious demise, unworthy of the legendary games the genre has produced. With the *Sam and Max* sequel canned to smithereens, gamers who like their walking done for them were being sorely neglected. But worry ye not, humble adventurer, because finally a head has popped above the pulpit and *hasn't* been sniped by a generic first-person shooter, and it's that of floppy haired do-gooder George Stobbart.

Stobbart, you might remember, is the star of the largely well-recieved *Broken Sword* series, and we last saw him in *The Sleeping Dragon* (PCF156, 81%). Since then the plucky chap has been somewhat down on his luck, and has ended up working in a dead-end bail bond office in a grim

and rainy corner of New York City.

Naturally, George isn't able to escape from conspiracies and religious mythology for long, though, and fairly soon he receives a *Maltese Falcon*-esque plea for help from a seductive blonde waving an ancient manuscript. Decoding this

Combined with context-sensitive menus, from what we've seen so far, the game feels much more like a PC adventure than its unashamedly multiformat predecessor did.

The technical side of *Angel Of Death* has been left in the capable hands of Sumo Digital, responsible

"The cartoony style of the series remains, along with some HDR trickery"

document provides the main thrust of the *Da Vinci Code*-style storyline, and the manuscript itself is an interactive object that must be explored and pieced together like a jigsaw.

Unlike *Sleeping Dragon*, *Broken Sword: The Angel Of Death* includes a more traditional point-and-click control method, along with the return of direct control.

for the excellent *Outrun 2006* (PCF190, 86%), and it's come up with a 3D engine that can handle the cartoon style of the series, but includes sought-after visual niceties such as HDR lighting. This leaves veteran storyteller Charles Cecil to concentrate on what we hope will be an intriguing plot and some engaging logic puzzles.

MARCH 2007

Brian Lara International Cricket 2007

In 2005, *Lara* was accessible, but not exactly cricket. For the 2007 Cricket World Cup tie-in edition, Codemasters is redesigning the engine to add the necessary subtleties of real cricket, like edging the ball into silly mid-off's face. www.codemasters.co.uk/brianlara2007



Overclocked

It's been a long time since a game actually scared us – deliberately anyway – but if all goes to plan, *Overclocked* might just succeed. Who's prepared to get into the minds of a US Army psychiatrist's patients? www.anaconda-games.com

WINTER

APRIL 2007

One army went to mow, went to mow down its opponents in a berserk rampage.

Chaos marches ever closer

Mark our words, it's *Warhammer: Mark of Chaos!*

DUE DATE Autumn **PUBLISHER** Koch
DEVELOPER Black Hole **WEB** www.kochmedia.com

Hordes of Skaven ratmen march squealing into a thick rain of elvish arrows; a giant strides across the land swatting knights into the air; two towering colossi go at it like Tyson and Holyfield. It may sound like one of Alec's idle daydreams, but that's the reality of war in *Mark of Chaos*, the latest take on Games Workshop's tabletop pewter-shooter.

And, rather like the videogame's namesake, much of the action revolves around character units: mighty, hammer-wielding knights, gryphon-mounted elven princes and raging 20-foot demons, to name but a few. As the battles roll on, your characters gain experience, and skill up in a series of disciplines, such as combat, command and spellcasting. Characters can also loot magic items from other fallen heroes, or by destroying key battlefield furniture, to improve their abilities, and those of their cohorts, on the battlefield.

But the aspect that *Warhammer* fans will dig the deepest is the multiplayer skirmish. Players agree on a points total, and build armies from pre-determined race-specific troop-lists, until everyone's points have been spent. Then it's off to the battlefield for some blood-curdling combat.

The action is frenzied, the combat brutal. And one really nice touch is that every troop type has its own mass value – a charging giant, for instance, will knock a column of smaller troops flying, while another giant might resist the bum-rush. Should be a whole bag of bloody fun.



Collapse: Devastated World

A century after Mankind's dominion over Earth has been replaced by violent aliens from another dimension, comes this post-apocalyptic free-ranging adventure. Could be time for the humans to strike back? Let's hope so. www.buka.com

AUTUMN 2007

Drakensang: The Dark Eye

A 14th Century fantasy metropolis is the lure here. Based on the successful German pen-and-paper RPG with over seven million players, *Drakensang* will have at least one living city with around 3,000 residents. www.drakensang.com



Colin McRae: DIRT

What we want from rally games is speed, mud and a damage realistic enough to make petrol-heads reach for the Haynes manual. This has all that in abundance, and you can even try out the legendary car-shredder Paris-Dakar, too. www.codemasters.com/dirt



A tale of two new cities

Another 6,000,000 players set to join the *Burning Crusade*?

DUE DATE Christmas **PUBLISHER** Vivendi Games

DEVELOPER Vivendi Games **WEB** www.worldofwarcraft.com/burningcrusade

Blizzard recently fired up its forthcoming *World of Warcraft* expansion and showed us some of its secrets. We were treated to a tour of the home cities of each of the two new races: the evil Blood Elves' Silvermoon is tall and beautiful. Its elegance is marred, though, by a huge black gash of destruction left by the armies of their mortal enemy: Prince Arthas.

The new Alliance race, the Draenei, fled their home planet in a giant spacecraft, and have crashed on Azeroth. The survivors of the crash have regrouped and formed a city, Exodar, which hasn't been shown in any of the screenshots released so far, since it simply isn't finished. We got this impression when our character came to a series of large glowing symbols in the bowels of the ship: one was a bona fide Draenei cypher, but the others were the Thundercats, Superman and Transformers logos.

Patience, everyone. The WoW expansion is nearly finished.

Clive Barker's Jericho

Called an 'unflinching realization (sic) of a Clive Barker nightmare', by Barker himself, all fans should be getting duly excited right about now. Special Forces squads trained in the arcane arts and Evil Incarnate itself: there's going to be blood, of that we're pretty sure. www.codemasters.com/jericho

WINTER 2007

Overlord

This title sees you playing the heir to the legacy of an evil ruler. If it can capture the humour and downright nastiness of *Dungeon Keeper* then we're going to be in for some hero-mashing fun. www.triumphstudios.com



You Are Empty

If you thought *City 17* was a less than pleasant locale, spare a thought for the mutants trapped behind this alternate 1950s Iron Curtain. Soviet Russia hasn't been so full of mangled man-flesh since Chernobyl, and you've got to put it all right. www.youareempty.com





Jim Rossignol
MOTORHEAD

Watchthisspace

THE FUTURE IS HERE. JIM ROSSIGNOL REVS IT UP

Tankbike!

The ride of the future just arrived in style

The Michelin Design Challenge is an event in which the big tyre manufacturer asks progressive vehicle designers to come up with innovative ideas for the future. The 2006 submissions to the competition have all been typically impressive, with a couple of concepts standing out as what we (and a few other commentators round the world) really wish would be the future of vehicle design.

Top of the list is the Hyanide (pictured). This tracked bike was designed by German automotive engineers Oliver Keller and Tillman Schlootz to act as a hybrid between performance bike and off-road vehicle. The 77 segments in the caterpillar track are made of reinforced plastic and tyre rubber, and the track runs across steering pins at both the front and back of the machine, allowing

precise control for hill-climbing or off-road travel. The 60hp 500cc liquid-cooled single-cylinder engine would provide a top speed of around 80KPH and the vehicle is large enough to carry two riders, as well as equipment for those wilderness journeys.

Another ambitious design, although significantly less exciting than the Hyanide, was the 'Mobility', or driverless bus. The 12-seater machine was designed in the UK by Capoco Design Limited, and relies on radar, magnetic sensors and GPS to automatically negotiate bus routes. The system is also cash-free, relying on passengers to pre-pay for the service via their mobile phones. Boarding

The whole chassis bends as the rider leans in around corners.



sensors would pick up the phone presence aboard the bus and automatically toll the passenger's account. The Mobility is also designed to run on a hydrogen fuel cell, making it environmentally sound, as well as potentially disconcerting to ride in... www.michelinchallengedesign.com

Robotree

This strange term has been coined to describe the work of Jill Coffin, John Taylor, and Daniel Bauen, a trio of scientifically-minded artists who intend to combine nature and robotics. Their first creation was 'Breeze', an animated Japanese maple. The tree was covered in actuators made out of memory alloys, which return to their original shape after bending. Sensors placed at strategic points around the tree allow it to detect the presence of other objects in its immediate vicinity, and slowly reach out and touch people nearby. The invention is also capable of interacting with its environment, swaying in a convincing manner as people move past it.

www.robotany.blogspot.com

This month in
Science
September, 1916

Tanks were first used in combat in the Battle of the Somme. They came without instructions, and initially commanders assumed that infantry should walk in front of them. That didn't really work, though.

Control the weather

Play God with a few rockets

The American company Weather Modification Inc can make it rain, snow, or even clear on a foggy day. Its weather-seeding technologies range from ground-based rocket silos to a fleet of chemical-launching aircraft. The need for such applications are far-reaching, from ski resorts which need snow, to farmers who need their crops watered. Weather Modification will have a go at the weather for you, or even sell you equipment to do a bit of cloud-tinkering yourself. The concept of cloud seeding, where crystals are sprayed into clouds to induce rain, was invented in the 1940s (by Kurt Vonnegut's brother, Bernard), but it has been developed into a fine science in the last couple of decades, including sophisticated radar tracking systems to pin-point the effectiveness of seeding.

And what affect does all this manipulation have on the weather system? No one really knows, but it's worth noting that the first half of 2006 was the warmest period ever recorded in the US.

www.weathermod.com



Pic © Alamy

Controlling the weather is increasingly important to agriculture.

THE BEST GRAFFITI RESOURCE SITES

Stencil Revolution
www.stencilrevolution.com

"Collectively reconstructing the urban canvas", Stencil Revolution is a collection of works by many prolific graffiti artists, as well as a meeting point for discussion on the matter.



Banksy

www.banksy.co.uk

Possibly the most famous street artist in the world, some think he's a visionary, others a sub-political, self-promoting media hack. Ahem. But still, he's incredibly popular, and his best pieces are on the site.

Streetsy

www.streetsy.com

Aiming to become the largest curated street art site on the web, Streetsy not only posts daily photographs of urban decorations, but uses online mapping technology to help you find them for yourself.

Ekosystem

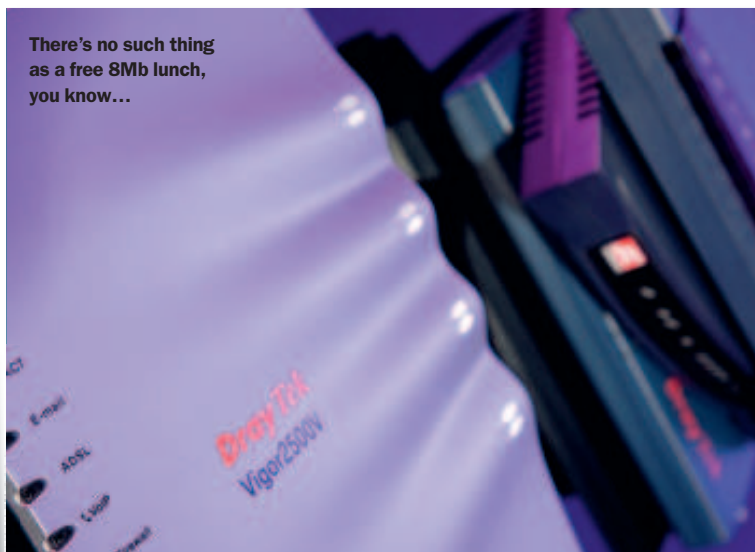
www.ekosystem.org

Providing a massive collection of art, with a focus on graffiti on public transport, Ekosystem reminds readers that "painting insanities on trains is bad AND illegal". Much like all the above. We wouldn't dream of endorsing such acts of wilful vandalism...

The webpages

THE LATEST ONLINE RUMOURS

There's no such thing as a free 8Mb lunch, you know...



Some internet service providers in the UK seemed to be taken by surprise by Carphone Warehouse's recent repackaging of its TalkTalk phone provision. It now offers local, national and international calls and free 8Mb broadband, all for a monthly fee of £20. Customers looked cynical and rivals stared in shock; the affair was crawled over immediately.

MAGNIFIERS OUT...

Keen fans of small print would have realised the slight catch in all this: you were required to pay £20 a month to qualify for this permanent freeness. The service, launched at the beginning of June, received far more applications than Carphone Warehouse had been expecting, with 340,000 customers signing up for the service in the first two months. This sudden uptake catapulted the company into the top five ISPs in the country, but also created a considerable queue for activation. The 8Mb broadband offer,

Free to talk?

Will the Advertising Standards Authority gag TalkTalk?



Turbo boost

JET-POWERED BEETLE

This is a sobering account of the development and creation of a twin-engined VW Beetle. Perhaps that doesn't seem incredibly exciting, until you realise that while one of those engines is the regular production petrol engine, the other is a jet engine. Exactly.

With a PhD in mechanical engineering, Ron Patrick decided to put it to excellent use in designing what he describes as the "wildest street-legal ride possible". The two engines can be used at the same time, meaning a casual journey on the Beetle engine can suddenly become rocket-powered insanity.

The site details the creation of the car, with a fantastically arrogant tone only deserved by someone who built a jet engine into a VW Beetle.

www.ronpatrickstuff.com



Fan trek

HIDDEN FRONTIER

For the first time in over 3,000 years, there are no *Star Trek* series in the works. What's a Trekkie to do – make his own? Oh.

While not the only fan-made *Trek* series on the net, *Hidden Frontier* is certainly one of the most accomplished and enthusiastic. Made in a spare room in Rob Caves' house, the amateur cast have been making the programme for seven seasons, all in front of green screen projections.

The first instinct upon watching an episode is to giggle. And perhaps this is a fair response. The scripts are as bad as any full-budget *Trek* series, and some of the acting is excruciating. But as much as you might want to mock, the quality of the CGI and the sheer effort shine through, so you end up feeling oddly impressed. And of course it's better than *Enterprise*.

www.hiddenfrontier.com



Over-exposure

LONG AWKWARD POSE

Sometimes advances in technology lead to evil, like atom bombs and downloadable ringtones. But sometimes they can lead to good, like the ability of the average digital camera to record a few seconds of video.

This power is put to excellent use by readers of Long Awkward Pose. Ask someone if you can take their photo, have them pose, and then rather than take a picture, pretend to faff around and have the camera record its 30 seconds of video. And then post the resulting uncomfortable footage to the internet! Oh yes.

It sounds entertaining as a concept, but the sheer glee that results is beyond words, and can only be understood once you've hot-clicked your way to the site. Really, this might be the greatest thing on the internet.

www.longawkwardpose.com

Charles Dunstone – CEO of Carphone Warehouse.



of course, was a loss leader for the company, and made it a target for its rivals.

THE ASA'S VIEW

However, if reports on Carphone Warehouse chief executive Charles Dunstone's blog are accurate, the ASA is rejecting the suggestion that claiming the service to be free while charging £20 per month is deceptive.

The complaint, brought by many customers as well as rival companies such as BT and Tiscali, appears to have been defeated by Dunstone's assertion that to use the term 'free', "it must be associated with a product or service that was available prior to its launch." As a concession to the concerns raised by the ASA, Dunstone says that the company has "agreed to make some small changes to the terms and conditions to the offer, but Broadband from TalkTalk was free, and still is free!"

What this means for UK broadband users is uncertain. BT has launched a new, cheaper package offering 8Mb broadband and reduced call charges, and Orange recently declared its intention to launch a complete communications package after owner France Telecom merged it with Wanadoo. FT is also promoting its Livebox device – intended to network everything with a plug in your house –

in conjunction with its own broadband service. However, pay more than £30 a month to Orange for your mobile, and 8Mb broadband is free.

Will customers benefit from this drop in charges, or will this create a drop in quality for the services before prices spike elsewhere to cover the costs? One thing is certain: TalkTalk has started a war among the ISPs. **PCF**

"The ASA says claiming that TalkTalk's service is free is deceptive"



Copyright watch



There's hope on the horizon. **John Walker** reports on the power of mums

Some months ago I brought you the sad news that UK courts had refused to hear any arguments regarding the entirely unestablished legal status of filesharing. But now I'm delighted to tell you of an instance where the vile bullying of the industry wasn't enough to scare a single mother and her daughter, and the case met a judge who, astonishingly, wanted to see some manner of proof of the allegations.

After the RIAA tried to placate the mother and daughter in question, Debbie and Amanda Foster, with an out-of-court offer for \$5,000, the Oklahoma pair stood up for themselves and demanded that the industry prove their wrongdoing before a court. Simply asking the RIAA to provide the information that seemed pertinent to the accusations – the names of the files downloaded, and the dates on which the crimes took place – the entire case fell apart when the Association failed to deliver anything.

Foster filed a motion for summary judgement, but the RIAA immediately panicked

and asked to withdraw the case. While the court agreed, it made sure that the corporation paid the pair's legal fees in full. As I've been saying for two years now, simply taking these cases to a conscious court should see them collapse.

As website Ars Technica (www.arstechnica.com) points out, Debbie Foster isn't the only mother to fight back. Currently, 42 year-old disabled single mother Tanya Anderson is counter-suing the RIAA for the wonderful list of "fraud, deceptive business practices, and racketeering". Rest assured, I'll be following this case very carefully in coming months.

The days of the RIAA's tactic of threatening innocent people with large suits, and then offering smaller, but still huge, sums of money to avoid them, might be coming to an end. And it might be because of a disabled single mum fighting back. Visit www.downhillbattle.org/defense to donate money to those fighting back.

Note – the opinions expressed in Copyright Watch do not necessarily reflect those of PCFormat.

Parent power: mums stand up to the music industry.



Picture Chris Garbutt



Urban decoration GRAFFITI RESEARCH LAB

Tying in with our Best Of column on the previous page, the Graffiti Research Lab (GRL) is a project by the utterly wonderful Eyebeam OpenLab (research.openlab.org), who exist to offer "a home for artists, engineers and hackers [as in 'coders'] pioneering open source creativity".

The GRL combines graffiti and geekery to create something beautiful: inventive, non-destructive street art. All their projects are open source, with instructions for all creations, and all works are published under the GPL and Creative Commons licenses. For instance, their LED Throwies (an LED, a battery, and a magnet combined), that can be thrown at anything metal in public.

On the site, witness hundreds of them arranged in the street, and the crowds of onlookers they pull.

graffitiresearchlab.com



Adspurts COMMERCIAL, COMMERCIAL

We don't understand this at all. But we think it might be important. It might even be magical. Jason Nelson has taken 42 clips of 1980s adverts, and arranged them in a grid. Each clip, lasting only a few seconds, contains a burst of video and sound, and is fired off by hitting a key on the keyboard. Which key matches which clip is a mystery.

The idea is to cast spells. The site suggests the 'Sore Spell' to start off with, cast by pressing [6], [V], [6], [V], [P], [Z] at a sensible pace. We recommend [J], [F], [4], [0], [4], [0]. Be careful, as it's very powerful. And [H] invokes Rainbow Brité.

This is why the net is great. If that's not enough, go to heybro.com/badscrabble and look at 15 photos of bad Scrabble hands. Feel fulfilled now?

www.secrettechnology.com/commercial/comvid.htm

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Lo-Fi

Bad meeting, poor weather, lousy traffic.

It's going to take hours to get home and
I have to put up with dreadful sounds from
my in-car entertainment system.

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Mail of the month



OVER TO YOU
What do PCF readers do when it all goes wrong?
Turn to p146 to find out

Mail in and win

pcfmail@futurenet.co.uk

[illegible]

PCF says We're not revamping www.pcformat.co.uk for IE7 until a major redesign in September, when it will become the best website in the world. In the meantime, check out blog.pcformat.co.uk.



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TOP 20

Windows troubleshooting tips

Mike Abolins banishes those all-too-common Windows XP annoyances with a guide to keeping your PC in the best of health

Thankfully, instances where Windows fails to start at all are relatively rare; less uncommon are the glitches, system freezes and general bugs that so frustrate every XP user. And while it takes something truly monumental to make you switch to Linux or elsewhere, they are annoying enough to contemplate heaving the thing off the balcony.

Of course, you're already in pretty good shape: System Restore is normally enough to remedy most problems, while more serious

issues can be dealt with by pressing [F8] before Windows starts to load and booting up the almost-mythical Last Known Good Configuration.

So we're hoping that we can help you cut down on your anger-management sessions with this collection of 20 troubleshooting tips. They're not going to bring your PC back from the dead, but they will keep it fit and you healthy of mind. Whether it's crashing applications, flaky networks or Windows refusing to do your bidding, we've got it

QUICK ACCESS TO CHKDSK

Hard drive glitches manifest themselves in all kinds of ways, such as extended boot times, difficulty running certain programs or unexpected error messages. Thankfully the means to resolve them exists within Windows XP in the form of Chkdsk, which will scan a hard drive for any problem sectors and then fix them. Although you can launch it from the Recovery Console, you don't need to: simply right-click on the drive in My Computer and

select **Properties**. Look under **Tools** and you'll see a button to launch it. If it's your primary drive you're scanning, you will need to restart your system to do a full scan.

ERRORS IN ERROR REPORTING

It's a useful feature, as it sends data to Microsoft about the whys and wherefores of a program crash, but the Error Reporting service can fall over, too. It's a problem that's often manifested with many programs with an online element,



Picture © Kevin February

Ban unsigned files

Halt! Who goes there?

It's not just unsigned drivers that are worth keeping an eye out for because unsigned system files can cause just as much – if not more – trouble themselves. Crucial to the smooth running of your PC, core system files can be replaced by software and hardware installations

as well as updates and malware. To scan your hard drive for such undesirables, open Run and enter sigverif. The File Signature Verification utility will launch and you can click on Start to get underway. Make sure you've got your XP installation CD to hand.



RESET ACCOUNT PASSWORDS

If you've lost your User Account passwords, reboot into Safe Mode and log on as the Administrator, an account that's normally hidden (and different to you having administrator rights) and, unless you specifically set one when installing XP (if you have lost that too, see this month's Saved feature), needs no password. Simply open up the Control Panel, reset the User Account passwords and you're done.



RESTRICTING DRIVERS

If you want to keep unsigned or beta hardware drivers out of your system, you can lock down Windows XP to keep them out. Open System Properties and click on the Hardware tab and Driver Signing. You can block all unsigned drivers (or, conversely, ditch the warning messages) and make this the system-wide setting, preventing other users from installing drivers that could, potentially, cause you trouble.



CONSERVE HARD DRIVE SPACE WHILE BURNING

If every time you create a CD or DVD, you notice that your free hard drive space diminishes, it's likely that your burning app is saving an image of the disc you just burned somewhere on your PC. Check in the burner's options to disable the habit and then seek out the image files themselves – they're usually in My Documents or Program Files.

AVOID BOOT PROBLEMS

If your system is slowing down at boot but you can't or don't want to perform a reinstallation, start using the Hibernate function instead of shutting down. You'll need to enable hibernation from within Power Options (available from Display Properties, Screen Saver) and when you've clicked on Turn Off Computer, hold [Shift] to switch the Stand By option to Hibernate.

DELETE IRKSOME UNDELETABLE FILES

If you can't dump a file through ordinary means, open up the Command Prompt and navigate to the directory that the file in question is in. Then end explorer.exe by opening the Task Manager and looking under the Processes tab. Return to the Command Prompt and enter DEL followed by a space and the name of the file to be deleted. Then

such as games and internet browsers, and often comes down to corrupted or absent system files. To resume normal service, pop your XP installation CD into a drive and enter sfc/scannow in the Run dialogue box.

RESETTING WIRELESS DRIVERS

If you can't get connected to a wireless network, even though your WiFi adapter is telling you that it's

working perfectly, it could be that Microsoft's Wireless Zero Configuration service is causing a problem. Right-click on My Computer, select Manage and then expand Services and Applications. Under Services look for the Wireless Zero Configuration entry, double-click on it, and under the General tab stop it. Wait a second and then restart; this will reset Windows' wireless drivers, enabling you to connect.

"If your PC is slow, but you don't want to reinstall XP, use Hibernate instead of Shutdown"

Troubleshooting Windows

Re-open the Task Manager and click on **File→New Task** and type in **explorer.exe** to return the normal desktop furniture.

MISSING OPTICAL DRIVES

Windows XP keeps track of a lot of files, so it's perhaps unsurprising that it'll lose a DVD or CD drive every once in a while, even though it's clearly visible in the Device Manager. If that's the case, open up *RegEdit* and head to **HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Class\{4D36E965-E325-11CE-BFC1-08002BE10318}**. Throw out the **UpperFilters** and **LowerFilters** values and restart your PC. You'll need to reinstall your third-party burning apps but otherwise everything's gravy.

RECLAIM FILES AND FOLDERS

If you're being denied access to a file or folder in Windows XP particularly one from another computer, you might need to establish your ownership over it.

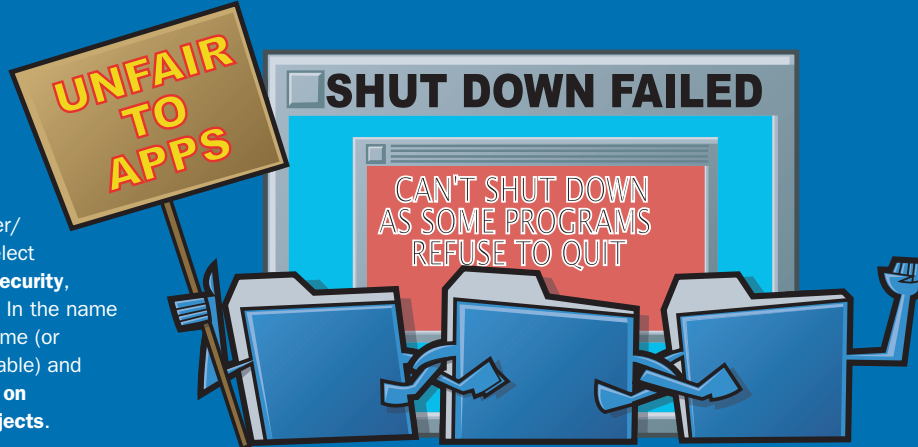
Right-click on the folder/file in question and select **Properties**. Then hit **Security**, **Advanced** and **Owner**. In the name list select your username (or Administrator if applicable) and select **Replace owner on subcontainers and objects**.

DISABLE FILE INDEXING

Unless you have a memory like a sieve and find yourself regularly using the Search utility to dig out ancient documents or images, the file indexing service can simply get in the way by consuming system resources and slowing things down. It's easy to turn off, though, and this can be achieved by opening **My Computer**, right-clicking on your hard drive and selecting **Properties**. Look under the **General** tab and you'll find an option to disable file indexing.

FRUSTRATING FIREWALL

If the built-in Windows Firewall is driving you mad but you can't seem to disable it (the option to do so is greyed out) from the



Control Panel, open the **Run** dialog, and enter **net start SharedAccess**, minus the quotes. You can reverse this command simply by entering **net stop SharedAccess**.

IGNORE SUPER PREFETCH TIPS

A widely circulated registry tweak that promised the activation of Super Prefetch, a technology supposedly added in Service Pack 2 that's present in Windows Vista, was revealed to be bogus. While the tweak does no damage, it doesn't stop your system from slowing down as it gets older, but defragmenting the Prefetch files does. Open the **Run** dialog box and enter **defrag c: -b**.

SPEED UP LOGON

Autoexec.bat is a file that used to be responsible for launching programs when Windows booted, but it's no longer needed due to

forcibly block any such error messages slowing your system down in future.

UNSTABLE PROGRAMS

If certain applications are becoming flaky, crashing and freezing for no apparent reason, it may well be that their .dll files aren't being purged when you exit from them. As they accumulate they can lead to instability, so nip into *RegEdit* to fix it. Go to **HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Explorer** and create a new **DWORD** value called **AlwaysUnloadDll**, and set it to 1.

CLEANUP INSTALLATIONS

If a program installation fails and you can't reinstall the app in question (something that happens to Java software with unerring regularity) afterward, you'll need to get rid of the files that were placed

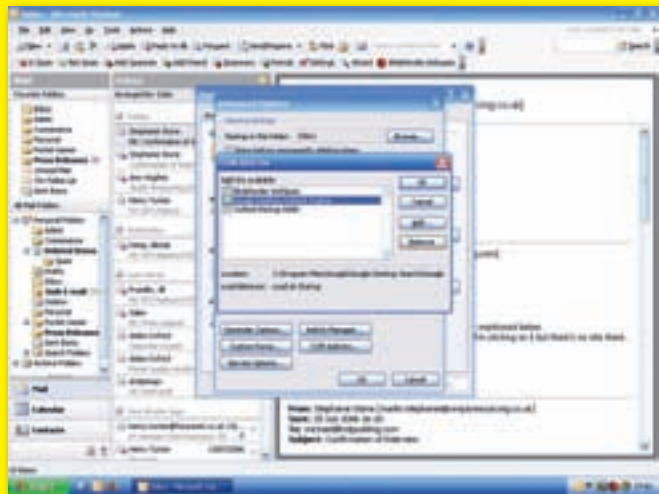


Exiting Outlook

It's harder to leave than you think...

If you're running Outlook 2003, which has a habit of placing an icon in your system tray, it can continue running there even if you've closed the main app. It'll continue retrieving email though it won't let you access it, so to avoid missing messages, use Task Manager to shut down all instances of Outlook. Then re-open Outlook and click on Tools,

Options, Other, Advanced Options and then COM Add-Ins. These add-ins are third-party apps (like virus scanners) and if an add-in is busy (such as scanning your email) when you try and close Outlook, the email client will continue running in the background. You can de-select Add-ins from here until you identify the troublesome one.



"Windows keeps track of lots of files, so it's not surprising that it can lose a CD drive occasionally"

differences in the way that Windows XP works. However, it's still present in many systems and can cause the log-on time to increase, so open up *RegEdit* and go to **HKEY_CURRENT_USER\Software\Microsoft\Windows NT\CurrentVersion\Winlogon**. Create or edit the **ParseAutoexec** **DWORD** value and set its value to 0, before restarting.

HUNG SHUT DOWN

Clicking on Shut Down and then returning, 20 minutes later, to find that your PC has hung on an error message because *Adobe Reader* has got itself into a tizzy is incredibly frustrating. Thankfully you can put an end to this by opening *RegEdit* and editing the **HKEY_USERS\DEFAULT\Control Panel\Desktop\AutoEndTasks** value to 1. This will enable Windows XP to

on your PC during the first attempt. This isn't easy as they're hidden away but the Windows Installer CleanUp utility will do all the hard work for you. You can download it for free from support.microsoft.com/kb/290301 and it'll scan your system for remnants of installed programs and enable you to clean them out.



DODGY DEFRAG

If Windows' integrated defragmentation utility is running even more slowly than usual or refuses to run at all, corrupted sectors on your hard drive may be hampering its progress. Usually its nothing more important than temporary files in the browser cache that cause trouble, but to sort them out and get your drive into order, you should run *Chkdsk* before re-launching the defragmenter. **PCF**



SAVED!

THE HACKERS' GUIDE TO DISASTER RECOVERY

Master of disaster **Oliver Mather** shows how major PC problems needn't necessarily herald electrical Armageddon

Exploding Globe Image © Corbis

Caffeine fixed

A rich, aromatic blend is no good for a collection

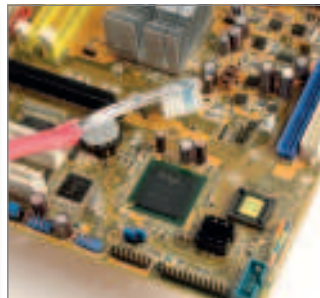
While coffee might be good for drinking, its mystical powers certainly don't extend to boosting your PC's wellbeing. Introducing any form of liquid to your computer is an incredibly bad idea on many, many levels. See, liquids have this reputation for merrily short-circuiting any item that happens to

have electricity flowing through it rendering your PC kit useless.

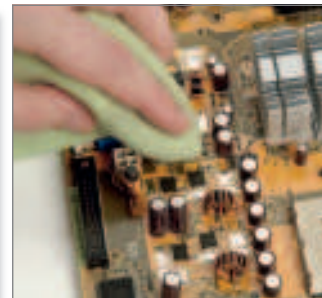
Such a foul-up would, you'd think, lead to irreparable damage. Not necessarily. Taking the following course of action won't make your PC as good as new and it is admittedly a long shot, but it could give your gargling gaming rig a fighting chance of survival.



1 If the computer's switched on, cut the power as soon as the spillage has occurred. Don't bother shutting down through your operating system – get the power cable or battery out as soon as is humanly possible. Of course, watch out for possible electrocution though – that's a whole other kind of disaster we can't help with in this feature. If, on inspection, the spill looks fairly minor and hasn't reached the core areas of your PC, consider leaving it to dry and booting up with caution.



2 Since your PC's circuit boards have already had a thorough dousing, you might as well give them another one. However, this time, it'd be more beneficial to use distilled water, which won't leave any mineral deposits behind, along with something such as a toothbrush to try and rid the PCBs of residue. Though your toilet paper may be famed for its softness, it's likely to shed fibres, which is undesirable. Look to use kitchen paper or a lint-free car bodywork cloth instead.



3 After finishing your initial cleaning, leave the affected PCBs to dry in fairly close proximity to a warm radiator for 12 hours or so. Avoid using a hair dryer as, though you've probably already run a fairly large static electricity risk with your components, it won't help to give them a second dose, and the heat level may damage components. Once the drying hours are up, use a substance such as chemical gasoline that will evaporate to clean the last layer of residue from your circuit board's components.



DiePod

No-one likes a sad iPod. Cheer it up with some tender loving care

Occasionally an iPod can break down. When this happens, the player displays a sad face, or makes a clicking noise. It's worth giving it a shake – this, according to many users, has been enough to get a faltering iPod functioning perfectly normally once more. Of course, you could do more harm than good, so it might be wise to consult Apple if your player-based woes persist.

Apple states that any repairs to your device not carried out at source



will render its warranty void. However, some brave owners have found that disassembling their iPod and reseating the hard disk's ribbon cable restores the device to working condition. If your player is out of its warranty period and you're happy to attempt some DIY, it can't do any harm. To get into your iPod, take a screwdriver, or knife, and very carefully pry the edges open on each side. Be aware that there is a delicate ribbon cable connected to each side of the case, so make sure you don't break it. Once into the player, the hard drive should be staring you in the face – simply check that it is tightly plugged in, put the case back together by applying equal pressure to all sides, and give the iPod a try.

Booted into shape

...Because you won't get far in computing without booting

Hold the gasps please, but Windows XP has been known to refuse to boot up. This is a tedious occurrence, especially as this seems to happen almost exclusively at the worst possible

itself, this is tricky if you've upgraded to SP2 and don't possess a Windows XP SP2 installation CD.

Fortunately, running the console outside of Windows is not complicated – simply boot from your Windows XP CD by changing the boot device in your CMOS or Boot Options menu on startup. Once the Welcome to Setup screen appears, press [R] to enter the recovery console. If you operate a dual or multi-boot system, select the relevant installation and you should arrive at a command prompt. From

“In reality, your chances of recovering a stolen computer are severely limited”

times. It's just as well, then, that the command-line based Windows Recovery Console is there to get you out of bother. While it's possible to install the console in Windows XP

here, there are a variety of commands you can use to get your system back on track.

Your ability to boot into Windows XP could be being marred by a



❑ dodgy boot sector on your hard drive. If you suspect this is the case, type **FIXBOOT** at the recovery console command point. Answer **Y** to the 'are you sure?' question and you may be good to go. It's also worth doing the same with **FIXMBR**, unless you have any complicated multi-boot software installed – this restores the master boot record to default values and will usually overwrite any customisations to it.

If, however, your PC cites ntldr or ntdetect.com as the reason for its booting woes, the **COPY** command may come in handy in case the files are corrupt or missing. Simply type **COPY X:\i386\<name> C:** where **X** is your CD drive's letter and **<name>** is the relevant missing file.

Polished prose

Rescuing damaged CDs with no more than a spot of elbow-grease

Picture the scene; you've completed your latest best-selling novel, based on the fortunes of a dysfunctional family of talking Koalas. To ensure no valuable passages can be leaked to the press, you've destroyed all copies and are taking the one master-disc to the publisher when you notice a large scratch. Fear not though, for the public needn't lose out. A mild metal polish such as Brasso has established an impressive reputation for CD-healing. ten minutes of polishing with a lint cloth followed by the careful removal of any excess dirt or dust should set your precious data back on track.



Locked out

Forgotten your only Windows XP Administrator password? Don't panic...



Pic © Alamy

Here's a pretty irritating scenario: imagine if you'd just built a state-of-the-art wonder-home in which you could live out the rest of your days in geeky peace, only to lose the only set of keys to it. It would be considerably more disappointing, though, if you'd built the house to

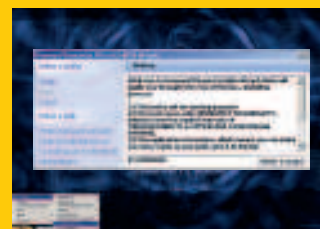
be so secure that keys were the only possible way to gain entry, and that your only option was now to demolish the house and build a new one.

Fortunately, Windows XP isn't the computing equivalent of a fortress, so, if you've lost your keys, all you'll need to do is

bypass your system's security protocols. Windows willingly provides an access point (or two) while *BartPE* (which we'd love to covermount but aren't allowed to for long and complicated reasons – grab it from www.nu2.nu/pebuilder instead) provides a safe way back into your PC.



1 BartPE is, essentially, a 'lite' version of Windows XP able to run off a CD. This makes it ideal for maintenance of an operating system that you're locked out of. You'll need a functioning OS to build it on, so exercise foresight or use a friend's PC should disaster already have struck. Copy all the files from your Windows installation CD onto your hard-drive and ensure the **Source** field in *PE-Builder* is pointing to the relevant directory.



2 Download *Windows Password Renew* from tinyurl.com/nr6cy. Unzip it into your **C:\pe\plugin** directory (replacing **C:\pe** with the root directory of *PE-Builder* if you installed it elsewhere). In *PE-Builder*, click the **Plugins** button and ensure that *Sala's Password renew* is enabled. Having done this, select **Burn to CD/DVD**, insert a CD and click **Burn** to create your Live OS CD. Once done, restart your PC and boot from the CD.



3 Next, you'll see the fairly garish desktop with a **Go** menu in the bottom-left corner. Select **Sala's Password renew** from the relevant menu and, once the program has loaded, click on **Renew existing user password**. Following this, select the account to which you've lost the password, enter your new password twice and then click **Install**. You'll now be able to ditch *BartPE*'s interface and return to your freshly liberated Windows XP account.

Cash back

Been charged for things you didn't buy? Stay secure online

BE ALERT

Online ID theft can rapidly become a rather large disaster if you let it. Monitor your credit card bills, emails and shopping site logs to be sure someone hasn't gained access to your accounts or credit card details.

MAKE SOME NOISE

Consumers aren't liable for online credit card fraud unless they've lost possession of the card, in which case they can be made to pay up to £50. However, always let your bank or credit card company know if you suspect foul play.

LOCK DOWN

If you find you're a victim of online fraud, give your system a thorough check for key-loggers or other forms of malware (Spybot, on the disc, is good for this) that could be reporting your credit card details to an unscrupulous individual.

WAY OUT

Should you find that you've been scammed on an auction site such as eBay, report it as soon as possible. Both eBay and PayPal offer dispute resolution services. File a claim or 'open a dispute' detailing how you were scammed and you may be compensated.



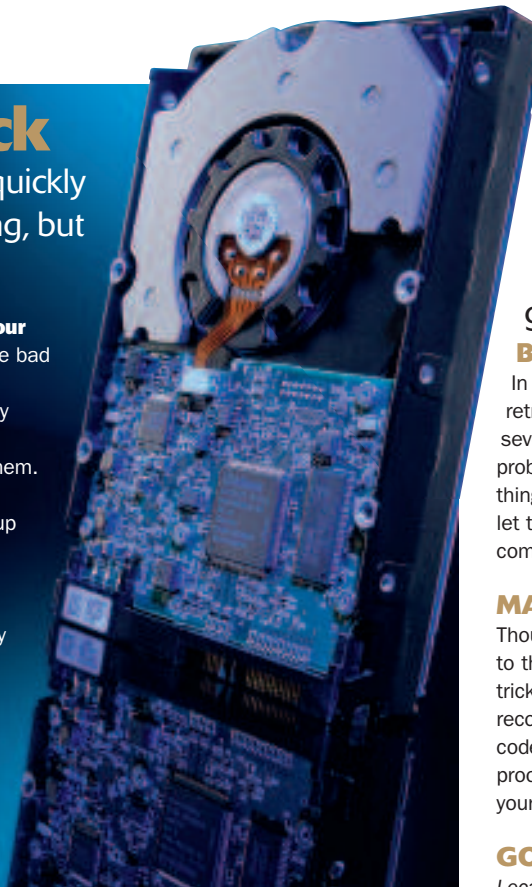
Hard luck

Losing files can quickly become annoying, but there's a cure

Bad sectors on your PC's hard drive are bad news for its data.

Should you start randomly losing data, your disk is probably suffering from them.

A prudent course of action would be to back up the data on the drive to DVD or another drive to save further losses. XP's disk-checking functionality may be able to provide you with a fairly quick solution to the bad sectors – type **chkdsk/R** into the **Run** dialog box to get your machine will scan for and repair them.



You're nicked

Bear these in mind should your laptop go walkabout

BOYS IN BLUE

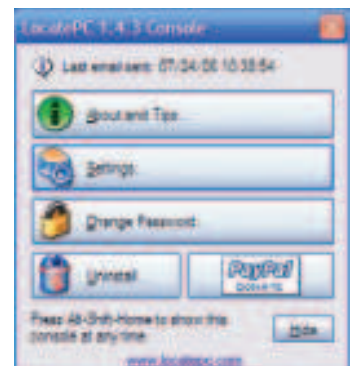
In reality, your chances of retrieving a stolen computer are severely limited. The police probably have a multitude of bigger things on their plate, but it pays to let them, and your insurance company know as soon as possible.

MAGIC MARKER

Though your case may be modded to the high heavens, it may still be tricky to claim should the police recover it. Pre-emptively writing a code on it with a UV marker for proof of ownership will greatly help your cause.

GOOD LOCATION

LocatePC (on the disc or www.locatepc.com) is an application of only 230KBs that will send an email with network details such as IP and MAC addresses as well as details of any installed VPN accounts from your PC at regular intervals or on change of IP.



SLEUTHING

A number of tools at dnsstuff.com will provide you with more information on an IP address such as the user's ISP. Its attempt at a geographical IP address map was less useful, locating our southern PC somewhere between Manchester and Denmark.

THE AUTHORITIES

Contact the relevant ISP and the police with the data LocatePC has provided you with. There are no guarantees you'll be able to recover your PC, but keeping the pressure up may, if you're lucky, yield a positive result.

Indecent exposure

Broken your BIOS? Help is at hand...

The BIOS is the beating, twitching heart of your system, so you really shouldn't play around with your it excessively, unless you know what you're doing. Ideally you should, wherever possible, use DOS-based BIOS flashing, as this is generally a safer way of doing things than from within Windows.

With potential outcomes including no network, USB, floppy disk or optical drive access, or even a borked motherboard, if you're not actually having any problems with your BIOS, resist the urge to flash it just because there's an update out.

If your BIOS is corrupted (either through no fault of your own or through a failed flash), you may, depending on your motherboard, have a number of options to correct the disaster. Increasingly, modern motherboards come equipped with dual BIOS systems. This means that if your main BIOS goes wrong, you'll be able to restore it by using an inbuilt utility to copy across the

backup BIOS to the main one. Don't give up hope if your motherboard doesn't have such functionality though – instead, locate the BIOS chip (refer to your mobo's manual) and have a look to see if it's removable or not. If it is, give your motherboard manufacturer a ring to see if it'll deign to sell you a viable replacement.

Though a bit of a long shot, if your board does have a removable BIOS and you can somehow temporarily beg, borrow or steal an identical model, you may be in luck, thanks to an arcane technique known as 'hot-flashing'. To do this, go through the steps as if you were flashing your BIOS with a boot floppy disk using the working motherboard. Once you've booted from the floppy, use a tool that doesn't conduct electricity to gently remove the working BIOS chip. Having done this, replace it with the corrupted BIOS chip and continue the BIOS flashing process. If all goes to plan, you should have two working chips once more. Needless to say, it's still a risky process for the second mobo.



■ Fighting fire

PC ablaze? Don't throw water over it...



CUT THE POWER

Should your PC somehow ignite, perhaps thanks to your efforts to get that Celeron to 100GHz, cut the power immediately – don't tell XP to shut down. Turn the power off at the mains. With a bit of luck, that'll end the fire.

WATER IS VERY BAD

Electricity and water never mix well. If you add it to the situation, you risk short-circuiting your PC and electrocuting yourself. Also take note that any smoke coming from the fire may contain harmful gases (your

average PC contains lead and arsenic) – don't breathe it in.

IF IN DOUBT

No matter how many hidden packages you've found in GTA 3, it's probably not worth getting burnt to rescue game saves – call the professionals if the fire looks too large for you to handle.

EXTINGUISH AWAY

Fire likes oxygen. If you're the kind of user who may set their PC on fire, you should have a CO2 extinguisher. A blast of this should rob the fire of its oxygen.

SALVAGE

Finally, check for the likely source of the fire. Do not re-use anything likely to have been responsible for your blaze. It's likely your PSU, CPU and motherboard won't be salvageable, though optical and hard drives have a far better chance.

"Blue screens can be caused by a variety of things, including faulty RAM and borked apps"

Star-struck

Drives playing up? Try this remedy

So your DVD writer is playing up? A burn that used to take 12 minutes now takes 20? Perhaps your drive has just failed altogether and you now have no storage facility at all? Unless you haven't heard, there's a particularly infamous suspect.

No definite 'proof' (if a lack of any successful claimants to a \$10,000 'prove-it' competition can be regarded as such) has actually been thrown into the public arena, though there are users out there convinced that the StarForce CD protection drivers included with a number of modern-games (often without the user's knowledge) is responsible for a wide range of drive problems.

Of course, before you go sacrificing games to rejuvenate your drives, you'll want to make sure you have the drivers on your system. Check by navigating to **Device Manager**, checking **Show hidden devices** under the **View** menu and expanding **Non-Plug and Play**



Drivers. Removing StarForce will render the games that use it as copy-protection unplayable. Uninstalling games using the system won't necessarily remove the drivers. Using the *StarForce Removal Tool*, available from tinyurl.com/9m2bf you will be able to cleanse your system the drivers just in case you're of the opinion that they are responsible.

Cleaning Windows

Don't blitz a senile Windows installation

Your version of XP might become a bit, well... flaky over time. Replacing drivers, such as your display drivers can easily begin to clog up your system, while corrupt programs' files also contribute to your PC's erratic function.

The traditional remedy to such a problem is to format your hard drive and install a fresh copy of XP, though there are better solutions.

You can, for example, essentially overwrite all of Windows' operating system files while avoiding the rest of your data completely by performing a 'repair' using your Windows install CD. To do this, boot from your trusty Windows XP CD. At the screen of choices you're presented with, press **[Enter]** to setup Windows, agree to the licence agreement with **[F8]** and then press **[R]** and follow the on-screen instructions. This will give you a brand-new, though likely out-of-date installation, so get busy with the patches once installation's completed.



Got the blues?

Can't get rid of a persistent Blue Screen of Death? Banish it once and for all...

There are few things more tedious than when your 'IRQL' is not less or equal, or indeed, when you have a page-fault, in a 'non-paged area'. Blue screens conveying these messages of ill fortune often occur when a new piece of hardware has been introduced to the system, or when there's a driver problem.

Check to see if this is the case by booting into Safe Mode after pressing [F8] during your PC's boot process. Since Safe Mode loads Windows with only the drivers essential to Windows' operation, if you fail to boot into it, you likely have either a corrupt Windows installation (see our Cleaning Windows boxout) or a hardware fault.

Ultimately, if a piece of your hardware is going to fail, there's nothing much you can do to get your PC up to speed again without getting your wallet or warranty out. As faulty system RAM will cause blue screens galore, it's worth running *memtest86* (on the disc or from www.memtest86.com) to test it for errors. Simply burn the

contents of the *memtest86* zip to a CD, boot from it and run the diagnostic tests. See lots of errors and, while your memory has probably had it, you've likely found the cause of your BSOD problems.

If your ultramarine woes started after the installation of a PCI card such as a TV tuner, you could be facing a showdown with a troublesome device driver. Though the majority of the time you'll be able to cure such issues by either choosing the **Roll back** or **Uninstall** options in the **Properties** panel of the relevant driver, you may find that they'll still be listed on rebooting. If so, get back into trusty old Safe Mode and get rid of them there.

Blue screens can also be caused by faulty apps loading on startup. Sysinternal's *Autoruns* utility, available from tinyurl.com/bmnu4 provides a longer list of startup items than *MSConfig*'s utility. In the same way, reducing your system to only the essential pieces of hardware can solve BSODs, so can reducing startup options before reintroducing them to find the culprit.



Knackered notebooks

Dropped your laptop? Resuscitate it with these tips

GOOD LANDING?

Watching thousands of pounds of equipment crash resoundingly to the ground may not be very pleasurable, but take note of how your laptop landed – it'll give you a better idea of what might be wrong.

NO SIGNAL

If the display's shot, plug an external monitor into your laptop and press the display toggle key (commonly [F7]). If you're in luck, your laptop's built-in display may be the extent of the damage.

SEARCH AND RESCUE

In case you need to urgently rescue some files from your laptop's crumpled hard drive, do a quick search of websites like Froogle, eBay or similar for a 'laptop drive adaptor'. They're widely available, quite cheap and will

allow you to connect the drive to a desktop PC via IDE or USB.

CORRUPTION

Should your hard drive have been in use at the time of its unfortunate meeting with reinforced concrete, there's a chance its write-head may have scratched the disk platter.

Consult our section on hard drive recovery if you suspect that may be the case. **PCF**

Change of heart

You don't know what files you've got 'til they're gone

Being ridiculed for your love of 1980s German dance music is hard and, we dare say, has led to the deletion of many a music collection from many a hard drive. We say, don't conform to normality – get those tracks back and be proud. When you 'delete' a file, Windows simply

makes the data available to be overwritten. Unless you've used a file-shredding utility, formatted the disk or been creating lots of new files, there's a good chance that a music file or any other kind of file will still be there. All you need to do is get it back. *eData Unerase* is a useful tool, and it's on our disc.



1 Simply select the drive/s on which your file/s last resided before clicking on the right-arrow. The software's interface is effortless to operate and belies the complication involved in recovering deleted files. As well as your hard drives, you can also retrieve data from optical drives.



2 Though the majority of the options in the free 'lite' version of *eData Unerase* are only available on upgrading to the Professional version, you should still be able to recover the vast majority of deleted files using the software. Click the right-arrow to continue and scan for files.



3 Having scanned our drive, the software had come up with our deleted files. Once you've discovered the deleted files you'd like to recover, check their boxes and click on **Save Files**. Having done this, click **Browse...** to take you to the recovered files and enjoy your Teutonic dance retrospectives anew.



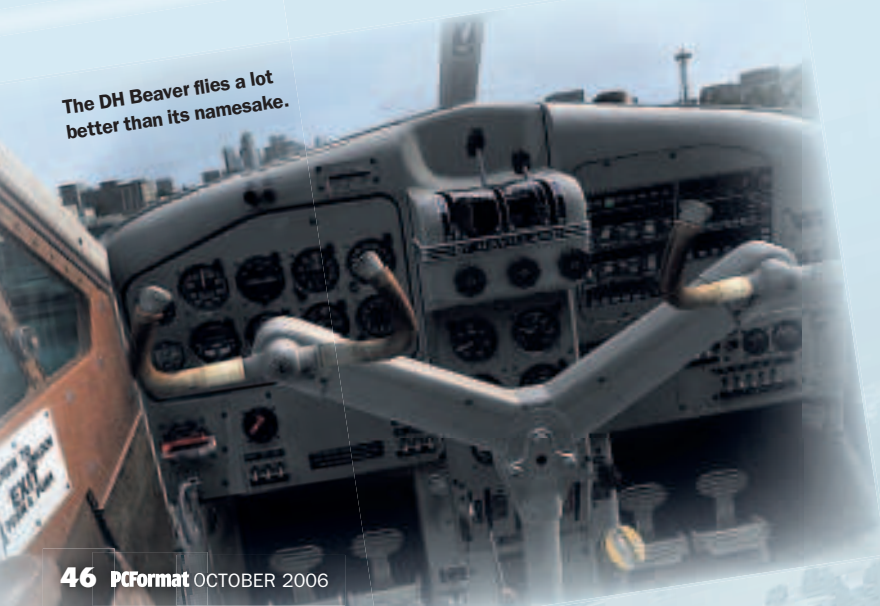
"Noting exactly how your laptop met reinforced concrete will help when you restore it to working order"



Onwards & upwards

Modelling the air and all things in it is the toughest computing challenge there is. **Tim Stone** asks Microsoft how *Flight Sim X* will do it. Again

The DH Beaver flies a lot better than its namesake.



When a developer stands up in front of a group of grizzled games journoes and says something like "We intend to have lifetime relationships with our customers, so we need to behave like lifetime friends" they usually get lynched. Well, Shawn Firminger can get away with it mentally lynched anyway. Shawn Firminger can get away with it because he heads the 50-strong Microsoft *Flight Simulator* team; many of his customers have been faithful for over 20 years, so talking of life-long associations is entirely natural. One way Firminger and his colleagues are hoping to keep those friendships going is through communication. Over the last year or two there's been a cultural sea change inside Aces Studio. During the development of FSX – the version of *Flight Simulator* that's coming this autumn – a rash of developer blogs has sprung up, staff have started participating in public messageboard discussions, user suggestions have been eagerly sought, beta code has been handed out; one of the most secretive outfits in the games industry has opened up. And the fans love it. Aces has also been big enough to admit that the FS love affair is really a ménage à trois much of the

Pioneer years

The rise and rise of *Flight Simulator*

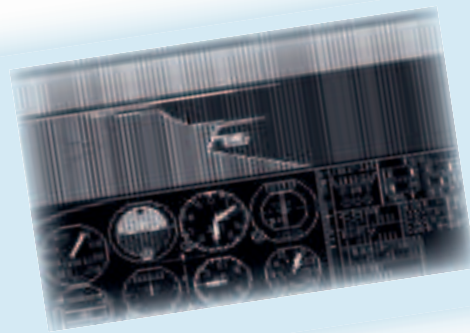
The first instalment of Microsoft *Flight Simulator* hit the shelves in 1982. A licensed PC version of SubLOGIC's earlier Apple II/TRS-80 sim, it required a beefy 4.77MHz CPU with 64K RAM. Just the one plane – a Cessna – was included, but this was modeled with impressive thoroughness. As armchair aviators rambled around the four sparsely-decorated scenery areas (New York, Seattle, Chicago and LA) they got to monitor around a dozen

gauges, tune NAV and COM radios and manually activate flaps, lights, magnetos, and carb heating.

By the time FS3 arrived in 1988, the feature-set had expanded to include 16-colour EGA graphics, external views, mouse and joystick support, and multiplayer. Two years later BAO – a company started by Bruce Artwick, the creator of the original *Flight Simulator* – released scenery and plane editors kick-starting

a thriving mod scene that continues to this day.

The early Nineties saw the FS hangar expand to accommodate new aircraft like the 747 and Concorde, and the old scenery system replaced by a global model. Textures arrived in 1993, the first CD-ROM version in 1995. By 2000, the series had helicopters, elevation-mesh scenery, a WW2 combat offshoot, and millions of devoted users.



Meet the fleet

Beavers and geese, but no otters

No FS release would be complete without new aircraft types. Here, the museum pieces introduced in FS2004 are given the heave-ho. In their place is a varied selection including an ultralight ideal for novice fliers and VFR (Visual Flight Rules) excursions, and the series' first Airbus, the fly-by-wire A321.

Bush pilots get three wilderness specialists, the DeHavilland Beaver floatplane, the Grumman Goose amphibian, and the Maule M7 Orion. The latter has STOL (short takeoff or landing) characteristics and comes with either wheels or skis. To

compliment the new AI tow-planes, the devs have added a new sailplane, the DG-808S. Other debutantes include the CRJ – a sleek passenger jet.

Among old favourites that keep their hangar slots are a trio of big Boeings, a pair of Cessnas and the Bell JetRanger helicopter. Maintaining its commitment to backwards compatibility ("No easy task" according to Firminger) Aces assures us that add-on aircraft designed for us that add-on aircraft designed for FS2002 and FS2004 will fly in FSX – good news, considering the amount of money users will have invested in third-party content.



time: "There are over 200,000 third-party items you can download and add to the FS experience and we have realised they are really important to the success of our product. For the first time in our history we now have a team of people whose sole remit is building better SDKs and APIs, and assisting add-on developers via new private forums."

FLIGHT PLAN

Of course, talking and listening only gets you so far. The real secret behind the extraordinary loyalty of the serial customers is the constant growth and improvement of the simulation itself. Despite the lack of competition, FS has really only had *Fly!* and *Flight Unlimited* franchises. FS has really only had X-Plane for company. Aces keeps pushing the envelope with new features and greater realism. In 2001, progress took the form of floatplanes, clever auto-generated scenery and fabulous interactive air traffic control; in 2003 it came in the shape of fascinating vintage aircraft and impressive dynamic weather modelling. In 2006 it's shared cockpits, game-style missions, and seriously improved scenery.

FSX is as much a world simulator as it is a flight simulator. At the start of work on this version, in pursuit of greater accuracy, the team bravely binned all of the geo data they'd used in FS2004 and started again from scratch with new, higher res material. Bill Chism and his data technicians were



"In one mission you have to drop cargo from a plane, which was impossible until now"

PAUL LANGE Lead Game Designer, FSX

tasked with taking terabytes of new global data purchased from various external agencies such as NASA (Aces is surprisingly secretive about its other suppliers) and trimming it into a form the FS engine could use. "We use data sets at various resolutions. We may get one data set for a part of the world at 1:1,000,000. We take that and make it work with other data sets that might be at 1:25000." Elevation, season, land and water class rasters, road, rail, river and shoreline vectors – it all had to be processed and synchronized. Using custom tools developed with commercial GIS package ArcGIS, much of this work was automated, but there were still plenty of occasions when technicians had to manually tweak things like rivers and roads so they fitted with other scenery components.

STEEP TRAJECTORY

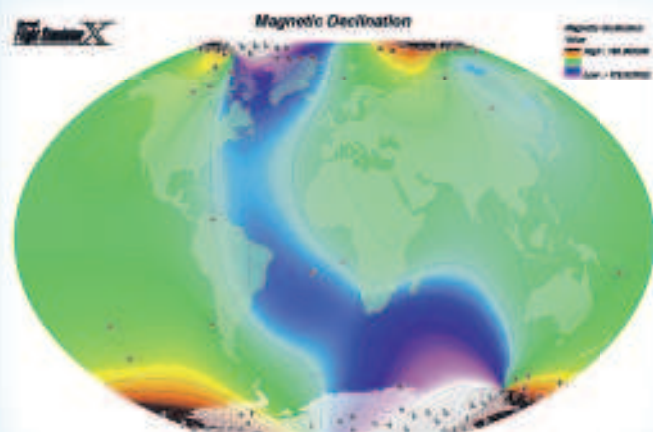
One of the most intimidating tasks that faced Chism and his staff was updating and adding detail to the 24,000 airports in the sim. "Usually when you gather a data-set from a provider on airports, all you really get is runway information. All the taxiways, signage, hangar and terminal locations, AI paths, parking positions – we have to build all that. Every airport in

Stunning Vista

Future-proofing Flight Simulator

How good is FSX going to look and how swiftly is it going to fly with DirectX 10 as the wind beneath its wings? No one at Aces can say for sure, but visual improvements should include more convincing clouds, fancier dynamic lighting effects such as god rays (those sunbeams that occasionally project through holes in cloud) and watery enhancements like ocean spray and whitecaps. A patch enabling these touches will arrive at the same time as the Vista release. Naturally, you'll need the very latest hardware to take advantage of it.

In theory, because DX10 shifts a lot of graphical donkey-work from CPUs to GPUs, the next FS version will have many more cycles spare for things like AI and collision detection. Combat Flight Simulator 4 with the DX10-enhanced FSX engine anyone?



Flight Simulator's mapping is so comprehensive that it surely can't be long before incorporates the migration patterns of the common sparrow.



Every field's an airstrip for the ultralight. Shame it sounds like a hairdryer, mind.

As usual there'll be no real-world liveries on the default planes.



"We have to build all the taxiways, signage and terminals for over 24,000 airports in the sim"

SHAWN FIRMINGER Lead Game Designer, FSX

Our world has been touched by a human hand." Aces' aerodrome crafters rely heavily on aerial images and diagrams provided by aeronautical chart makers. One wall of Chism's office is hidden behind a stack of thick blue volumes from Jeppesen, the most famous name in aviation cartography. The rapid growth of the air industry means a new tome arrives every month.

ONLINE BANKING

More accurate airports, finer elevation meshes and crinklier coastlines aren't the only ways in which the vast FS landscape has been improved. 'Auto-gen', the automatically generated landscape furniture that dots most vistas, is much denser, more varied and more localised in FSX. On the seas and oceans, Aces has come up with a way of adding dynamism to otherwise empty oceans. Chism explains: "For the first time, our world is festooned with authentic shipping lanes." Lose your bearings over open water and you may well be able to find a friendly vessel to follow back to civilization.

Many enhancements, which at first glance may seem purely aesthetic, do in fact have genuine

implications. Firminger: "The sim is so realistic that we model rooftop air-conditioning systems on some buildings. Depending on the dewpoint and wind direction that day, vapour will rise and get blown around. "This is important in an aviation sense because if you're trying to land on a helipad in a built up area, for example, you need as many visual clues as possible.

One day we'll be able to float over parks and fields in FS blimps and see tiny ant-like people waving up at us. That day is not going to be for a few years yet, but the series has taken a little step towards a populated world with the addition of AI fauna. Here and there in FSX, flocks of birds wheel and pods of whales cruise; in certain locations in rural Africa, if you fly low enough, you'll see herds of dusty elephants and giraffes milling around. According to Firminger, "most of FSX's animal models and animations are adapted from another Microsoft product – Zoo Tycoon. Where we can we borrow from other in-house titles – cars and some buildings have come from racing titles; our road networks are derived from the same data route-planning product *Streets and Trips*

Know your sky

Navigate the ancient way

Unless you frown on GPS and use real aeronautical charts for pre-flight planning, you probably won't notice one of FSX's most subtle data layers – magnetic declination. In Aces' world, as in the real one, compasses rarely point precisely towards the North Magnetic Pole. Irregularities in the Earth's magnetic field caused by slowly shifting mineral concentrations deep within the core produce local variations that can, if ignored, play havoc with manual navigation calculations.

The sort of back-to-basics simmers that like to plan their flights with the help of paper charts will probably spend most time studying FSX's improved cosmos. There are now around 10,000 stars twinkling in the night skies. Because all of these glimmering pin-pricks follow accurate paths, it's possible to use celestial navigation within the sim – assuming, of course, it's a clear night, you've installed a third-party sextant, and you're a maths wizard.



The difference in detail between the FS2005's version of New York and that featured in the new game (below) is nothing short of astounding.



If you don't like the stock planes there are tens of thousands of third-party alternatives.



uses. We're like a vacuum for additional content."

PLANE BORING

For every customer that buys a version of FS and flies it obsessively until the next one comes along, there is, according to Aces' Lead Game Designer Paul Lange, one that plays it once or twice and then loses interest. "They jump straight in and find themselves sitting at the end of a runway in a Cessna with no idea what to do. If they manage to take off successfully then they might go looking for their house or attempt a landing, maybe crashing in the process. Because that initial experience was so discouraging and difficult, some never pick up the product again." To ensure users like these linger long enough to get sucked in, FSX has been equipped

with new, significantly friendlier tutorials and a generous selection of unashamedly dramatic missions. If exhilarating challenges like plucking workers from an exploding oil platform, tearing round a twisting air-race course in a nimble aerobatic plane and hunting for a missing game-reserve lion from the breezy seat of an ultralight don't hook newcomers, then it's possible nothing will.

More diverse activities mean new design challenges for Aces, as Lange points out: "In one of the new missions, you have to drop objects from a moving aircraft – something that was not possible in earlier versions of *Flight Simulator*. While the mission team were off creating the content, the audio and



Aces' artists promise less pristine aircraft skins.



Bigger airports feature animated jetways and service vehicles.

the scripting, we had to make sure that the sim team were in the loop. We had to consider several factors, such as how dropping an object from an aeroplane might affect the weight and balance of the craft. What properties do we want to apply to the dropped object? How does that dropped object affect the rest of the world? Integration can present issues if you are not very careful in your planning and have clear, up-front communication."

WINGING IT

Raw excitement and imaginative reasons to fly aren't what everyone wants from FS. While hardcore simmers will doubtless enjoy the new mission system, they are probably going to get more mileage from other new features, like the radically overhauled multiplayer mode. Owners of FSX can do something users of previous versions have never had the chance to do – they can share their switch-stuffed cockpits with fellow human fliers. For the first time, overworked jetliner jockeys have the opportunity to split flight deck chores with a sentient second officer, and

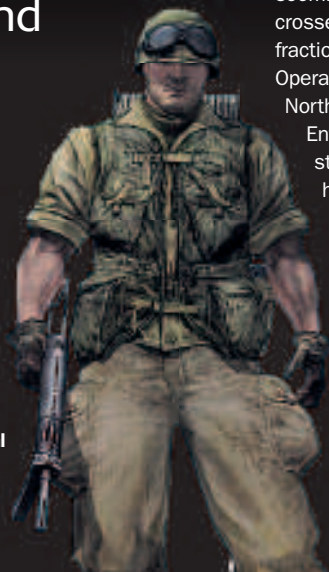
instructors can occupy the same plane as their students. Primary flight controls will only ever be in the hands of one player at a time (an understandable precaution) but all other panel paraphernalia can be operated by both simultaneously. In another significant multiplayer development, FSX introduces live air-traffic controllers. Accommodated in attractive 3D tower interiors with runway views and equipped with realistic radar screens, tin-pushers look set to become a vital ingredient of communal fly-ins.

So that's what Aces has been up to for the last three years – expanded multiplay, a more dynamic world, and plenty of lively activities for those who want them. One of the PC's oldest and most ambitious entertainment projects continues to grow at an alarming rate. Though the devs have taken to referring to FS as an operating system (an acknowledgement of the fact that few serious users fly without third-party add-ons) the sim has never been richer or more rounded. Come the Autumn, PCF will be barging to the front of the review check-in queue. Watch this air space. **PCF**



We can be heroes

Dave James wades bravely into Relic's latest real-time strategy fest, *Company of Heroes*, and finds a war-torn Normandy with nary a sign of Tom Hanks



Give noble Tommies like this chap the right orders and final victory will be yours.

Never has the maxim 'war is hell' rung truer than when PCFormat stood among seemingly endless rows of small white crosses bearing the names of just a fraction of the American dead from Operation Overlord, the invasion of Northern Europe by the Allies. Relic Entertainment's latest real-time strategy title, *Company of Heroes*, has to convey the true scale of the conflict it portrays – and that's quite a responsibility.

Relic is home to the minds responsible for both the *Homeworld* series and *Dawn of War*, both titles synonymous with all that is good in real-time strategy.

Still, after creating the best in sci-fi strategy games

with its two previous masterclasses in genre-busting, the transition from far-flung future to relatively recent history feels an odd choice. About three and a half years ago, while making *Dawn of War*, the dev team at Relic began planning its next RTS, and decided to start with a new engine. They wanted to create something "spectacular", says Relic's General Manager Ron Moravek, "the new, best thing we've ever done."

"We said: what do we not like about RTS games at the moment?" Moravek continues, "We didn't like how unreal they were – soldiers didn't look like soldiers. The maps didn't change and were the same each time you played."

Relic wanted realistic soldiers in real-world situations, but was still



"We wanted to ground *Company of Heroes* in something that people understood instantly"

SEAN DUNN Creative Director, Relic Entertainment

unsure about how to create that. Was it to be another sci-fi game, another space game? It was then that films like *Enemy at the Gates* and *Saving Private Ryan*, as well as the *Band of Brothers* TV series came about. "Everybody had thought, 'why would you do another World War 2 movie?', and then these movies came out with the visceral combat, and we thought 'wow, there can be some real innovations here.' At that point, *Company of Heroes* was born."

REAL-TIME SAVAGERY

The main thrust of the *CoH* project has always been about real combat, and the World War 2 setting allows it to be grounded in a situation that is immediately recognisable to anyone who's watched a war flick. "We wanted to ground it in something that people understood by nature," says Sean Dunn, the Creative Director.

Like Sid Meier (see Looking Back, p140), Dunn also looked to boardgames for inspiration: "We also loved a lot of those kind of geeky World War 2 games, but they were always missing something. A lot of the games that have come out of Germany have been detail-orientated, concentrating on things like the armour penetration values

of artillery, and while we've gone on to use all that in *Company of Heroes*, what we felt was missing from the other games was the entertainment factor. We felt there was a gaping hole in the World War 2 genre."

Initial worries about the need for yet another World War 2 strategy game were dispelled almost as soon as PCF saw *Company of Heroes*. Concerns about the first mission's *Saving Private Ryan*-inspired intro vanish in a puff of artillery smoke as you fight to

manoeuvre your troops up the beach through heavy bombardment.

You must guide the fictitious Able Company through D-Day and beyond. The missions, while not direct re-enactments of actual battles, are based on real-world objectives, such as taking and holding a town square or occupying a bridge. "We did a huge amount of research, and where we're not basing the missions on real events it's because we wanted to give the player certain freedoms."

ESSENCE DE GUERRE

The Essence engine powering *CoH* was built from scratch and designed around certain core ideas that Relic set down at the project's inception. "We wanted to make sure that players felt attached and involved with their units," says Josh Mosqueira, Lead Designer. Each

mission begins with a cinematic down at troop level, all using the game engine, and your involvement flows straight out of that. This immediately puts you at your soldier's shoulder rather than the detached god-perspective that most RTS games start with. It also drops you straight into front line action right from the off, rather than having to build up a HQ first.

Your troops aren't stupid either; it really does feel like you're the commander of a group of trained professionals rather than baby-sitting a bunch of nursery school dropouts. The more experience a squad has the better they get, giving them bonuses to details like speed and accuracy. Your attachment to certain squads stems from here and despite the fact that there is no morale system within the game, you'll force a

HIGHLY RESOURCEFUL

Fans of tedious micro-management should look away now

When you start thinking about real-time strategy games, you necessarily have to consider the double-edged sword that is resource collection. Back in the days of *Dune* it was a very simple equation indeed: you had spice, and that was it. But what on Earth do you 'mine' in war-torn Europe? Nazi gold? Hidden art treasures? Thankfully no.

You have three basic resources in the game: manpower, munitions and fuel. These affect what sorts of infantry, vehicles and buildings you can create as in a traditional RTS, but the way these are gathered is very different. "We don't have any soldiers mining for gold. The way you gather resources in the game is by capturing territories," explains Sean Dunn. "Each map is broken

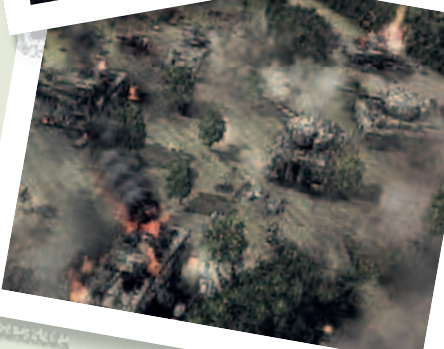
up into different sectors and a sector could be a road, a munitions factory or a fuel dump."

In order to get the essential fuel and munitions from those captured dumps, you must have a supply line running all the way back to your HQ. This makes for great tactical play in both single and multiplayer modes. You must always guard your supply lines as even the sophisticated AI will try and cut you off if you're not very careful.

You accrue more manpower simply by controlling more sectors. "it's like telling high command that an area is important, so you need more men to maintain it."

"We wanted to give the player a sense of battlefield decisions, not economic decisions," adds Josh Mosqueira. "It's really important for us that the player feels that the resourcing is actually contextualised."





Multiple personalities

There's two sides to every battle, especially when Nazis are involved

The multiplayer games are the only times that you'll get to live out those *Downfall* moments yourself. Yes, there's no Nazi-play in the singleplayer campaign, but after all who wants to kill the Allies? In multiplayer, though, you need someone to fight against.

It plays very much in the same way as the individual game, in that each of the maps is divided up into sectors with the same sort of resource points. Your supply lines, however, become far more important in keeping your HQ stocked, as on the other side of the map is your enemy building his own base and army. There's likely to be more fighting over certain key links in your lines rather than places with designated import by the level designers. "It means a lot of dynamic gameplay in the multiplayer mode, it's not just one focused area. It's all important, but you get to place the level of importance on each of the areas of the map yourself."

Each faction has three distinct areas of command, controlled through the Company Command Tree, and these come into their own in the co-op team battles. On the Allies side, for example you get the airborne, tank and infantry companies, and each player on the team can specialise in a chosen area. Using combined arms you'll have a commander controlling your infantry while another provides air support and forward reconnaissance. "It really promotes the use of team play, especially if there's another two playing as a team."

■ retreat just to save a favourite group's collective bacon. At certain points when controlling your infantry, it feels so much like the older brother of *Cannon Fodder*, we almost shed a cheery tear. Almost.

The controls are simple, traditional RTS fare, but the squad AI takes care of the fiddly micro-management allowing you to create intricate tactical plays with a few mouse clicks. Every movement order is accompanied by a *Full Spectrum Warrior*-style preview of the squad's final positions, allowing you to shift them from cover to cover in confidence: a vital part of



RON MORAVEK General Manager, Relic Entertainment

"We wanted to create something spectacular – the new best thing we've ever done"

the game's infantry command.

PICK UP AND PLAY

Everything on the battlefield is treated like a living entity by the all-new Essence engine, and this creates almost infinite permutations to the missions. Find an anti-tank gun nestled in one corner of the

map, take out the troops and Bob's your mother's brother – you've got yourself a big ol' boom-cannon to stick it to Jerry. The same is true with all weaponry carried by the enemy, including PCF's personal favourite, the mortar. Sitting at the back of your lines, the mortar can rain down fiery death upon the

TANKS FOR YOUR EVERYTHING

Armour penetration values: tedious or vital?

As we've already established, the Relic boys were big fans of the geeky World War 2 strategy games of old, and as such they appreciate the value of technically accurate in-game vehicles.

Each vehicle is accurately designed with specific armour ratings and sophisticated damage models. It's not something that you have to know the specifics of to enjoy the game, but the effect of the different armour values becomes obvious during play.

With the tanks in particular, it's important to keep the most heavily armoured section pointed at incoming fire. As this is always at the front of your tanks, you don't have to pore through reams of statistics to find it. Controlling your company's vehicles then becomes much more tactical, as you struggle to keep your vulnerable sections away from enemy attacks.

The game's damage modelling also means you have to think carefully about what you do with your vehicles. Expose the rear too much and the engine

will get torched, meaning that your vehicle will move much slower than it should.

You're not just stuck with the basic machines; there are upgrade paths for all your tanks, for example. "We have a fun upgrade for the one of the Sherman tanks: the mine-flail," says Sean Dunn. "When you use this against enemy troops you get this fantastic display of limbs flying through the air." Nice.



Defending your supply lines is vital to success in CoH.

enemy from a safe distance, so long as you've got another squad doing the spotting for you.

"To make the player connect with their troops, we needed them to react to their environment, to look alive and we needed a real battlefield." What this means is pure, unadulterated destruction. Watching your brave lads reacting to the way the world has changed around them immerses you even further into the game. Torch a building and that fire will spread to other flammable targets, or you can create a DIY window in the side of a building—using a large enough gun—that allows you to place a squad or a sniper at strategic points not scripted into the game. The effect this has on your in-game tactics is truly immense.

This means each mission can be completed however you like, so long as the objectives are met. One of the early missions finds you taking the town of Carentan, a vital linking point between the landing beaches of Omaha and Utah. "The level of detail in the mission plan is simple: take Carentan. So do it however you want," enthuses Dunn. "If you want to go and level all the buildings the Germans are holed up in, you can. But when the Germans counter-attack those buildings are gone, and so is your cover. It all depends on how you want to play it."

It looks like Relic has done it again, taking the RTS genre by the scruff of its neck and making it feel new. We were so wrapped up in the intricacies of a single mission that hours literally flew by. And the feeling of detachment when you break away from the game is a reason to play in itself. The best real-time strategy ever? Could well be, you know. **PCF**



MAKE YOU FAMOUS

Professionally realised mod cinematics? Surely you jest...

Relic has always been heavily involved with the mod community, packaging mod tools with all of its games right from the off. "Mod community support has been key for all of the Relic titles," explains Sean Dunn.

This tradition continues with *Company of Heroes*, and this time goes further than ever;

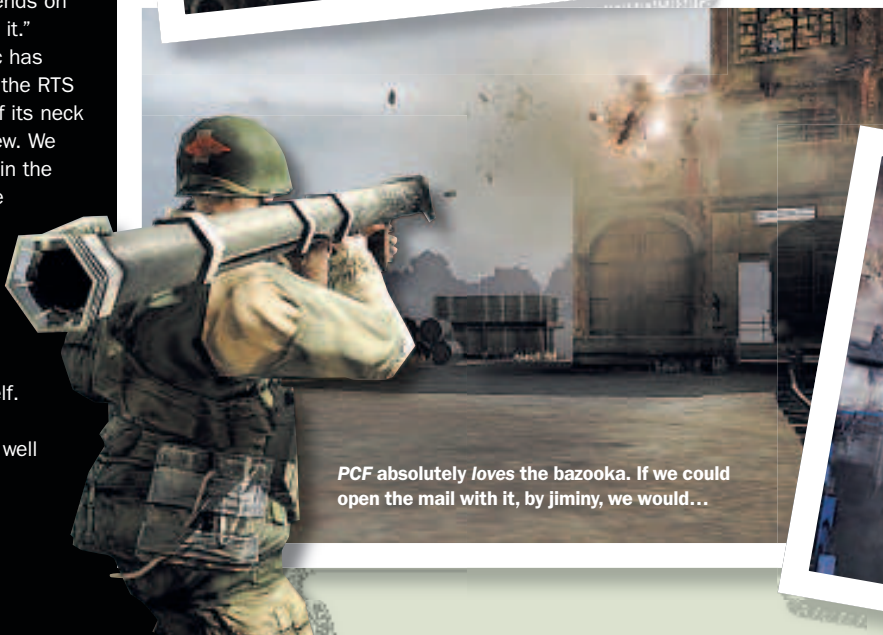
packaged with the game is a tool called *Moviemaker*. This is designed to allow modders to create their own in-game cinematics. "The reason that *Moviemaker* came around was the pain that we went through with doing the in-game cinematics for *Dawn of War*."

The *DoW* scenes were created via scripting, which meant that each 'actor' had to be placed giving them specific XY values to make sure they were in position. "This hurt the quality of the non-interactive sequences in *Dawn of War*. We didn't want that for *Company of Heroes*. So the tool was built to facilitate what we wanted to do with the game. And when we realised how

incredibly powerful it was, we started to say 'alright, we need to put community features into this so people can make their own'."

Not that every single character has to be individually placed however, as you can save out actual game footage into the *Moviemaker* tool and edit it yourself later. You can then add in new camera positions and cuts. If there was a particularly impressive explosion at a certain point in the game, for example, you could then go back into it and place cameras at key points. "Or you'll think 'wouldn't it have been awesome if there was guy on top of that building?' Well, you can go and put him there."

These pitched battles can then be used as the backdrop to a cutscene, as you focus on an individual 'actor' in front of the camera with their own dialogue and movements. "You can position every actor, you *can* do that if you like, but the AI looks great. What they do looks really convincing. You get to create your own massive battle backdrop, but the camera's focused on single soldier."



PCF absolutely loves the bazooka. If we could open the mail with it, by jiminy, we would...



reviews

All the latest games, gear and apps

60



ATI X1950XT

Our scoring system

0-19% Unusable or astoundingly rubbish

20-49% Largely not worth spending money on

50-69% Some decent features but uninspiring

70-79% Accomplished without the must-have factor

80-89% Outstanding. Awarded Top Gear or High Score

90+ Exceptional. A PCFormat Gold Award winner

Our key promises

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We've been reviewing kit and games for 14 years. With over 8,500 reviews written, we have the most talented, dedicated and authoritative teams in the business.

2. Integrity is paramount

We never trade pages for exclusives, or review games not signed off as finished by the publisher. Where we've looked at reference hardware, we'll make that clear in the review.

3. The PCFormat Gold Award

Only when a piece of equipment or game exceeds our expectations in terms of innovation, excellence and value for money does it get one of these coveted honours.

4. High Score/Top Gear

It's a misconception that only 90%+ is an essential purchase. Anything scoring 80% or higher is festooned with one of these, making it one of the month's most highly recommended.

5. We want to know what you think

We are PC fans writing for PC fans, so please share your thoughts on new stuff in our forum: <http://forum.pcformat.co.uk>



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PC cases

PCFormat Experts



MIKE ABOLINS
Took Windows XP to task this month and let us all in on the secret of a happy system with his trouble-free guide.

MOST WANTED
A healthy PC



JOHN WALKER
Dear John lived out all his childhood fantasies this month. And then played out *LEGO Star Wars II* and *Pixar's Cars*...

MOST WANTED
Funny shaped bricks



AL BICKHAM
Another month and another week-long stint of benchmarking graphics cards. Was the X1950XT (p60) worth the effort?

MOST WANTED
An end to benching



MIKE CHANNEL
Mike was somewhat dejected this month after realising that he could no longer legitimately play GTR2 (p90) at work.

MOST WANTED
A real car



JEREMY LAIRD
Our resident technocrat found even more to write about his beloved Conroe in his Core 2 Duo mobo roundup on p64.

MOST WANTED
Chips with everythin'



DAVE JAMES
Flew over the Briney in a DC3, then lost his fragile grip on sanity benching a world of hard drives. Ah, the horror...

MOST WANTED
To be back in the air

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Turn to page 134 and never miss an issue of PCFormat again!



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LEGO Star Wars II



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» CONROE MOBOS
You want chips with that?

We're all agreed then that the current chip of choice is Intel's superlative Core 2 Duo. It's fast, cool and you can overclock the pins off even the cheaper CPUs. The only thing holding it back is the confusing nature of its supporting chipsets, and you need the right motherboard to get the most out of your spanking new processor. Which is where we come in.

78

» PHOTO PRINTERS
Snap happy inkjet joy

Just think of all those pictures on your PC that you've always been meaning to get printed. That holiday in Skegness, that trip to the spice mines of Kessel; if only you had a printer at home to rival a photo lab printer you could do it yourself. Well, lucky that we've just taken a look at five of the best photo inkjets around then, eh?

90

» GTR 2
Petroleum-based perfection

Taking a turn for the esoteric in his review of the sequel to the super-anal GTR, Mike Channel ponders, 'why do we play games? Is it the journey or the destination?' With this much horse-power under the bonnet of your fibreglass chariot then you've gotta say it's the journey...

100

» CALL OF JUAREZ
Strap on your irons

We've been waiting for a proper cowboys and injuns romp for a long while and we may well have found a worthy contender in *Call of Juarez*. Featuring such Western stalwarts as the killer-turned-preacher-turned-killer and the random damsel in distress how could it go wrong?

PLUS

Software

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Webplus 10

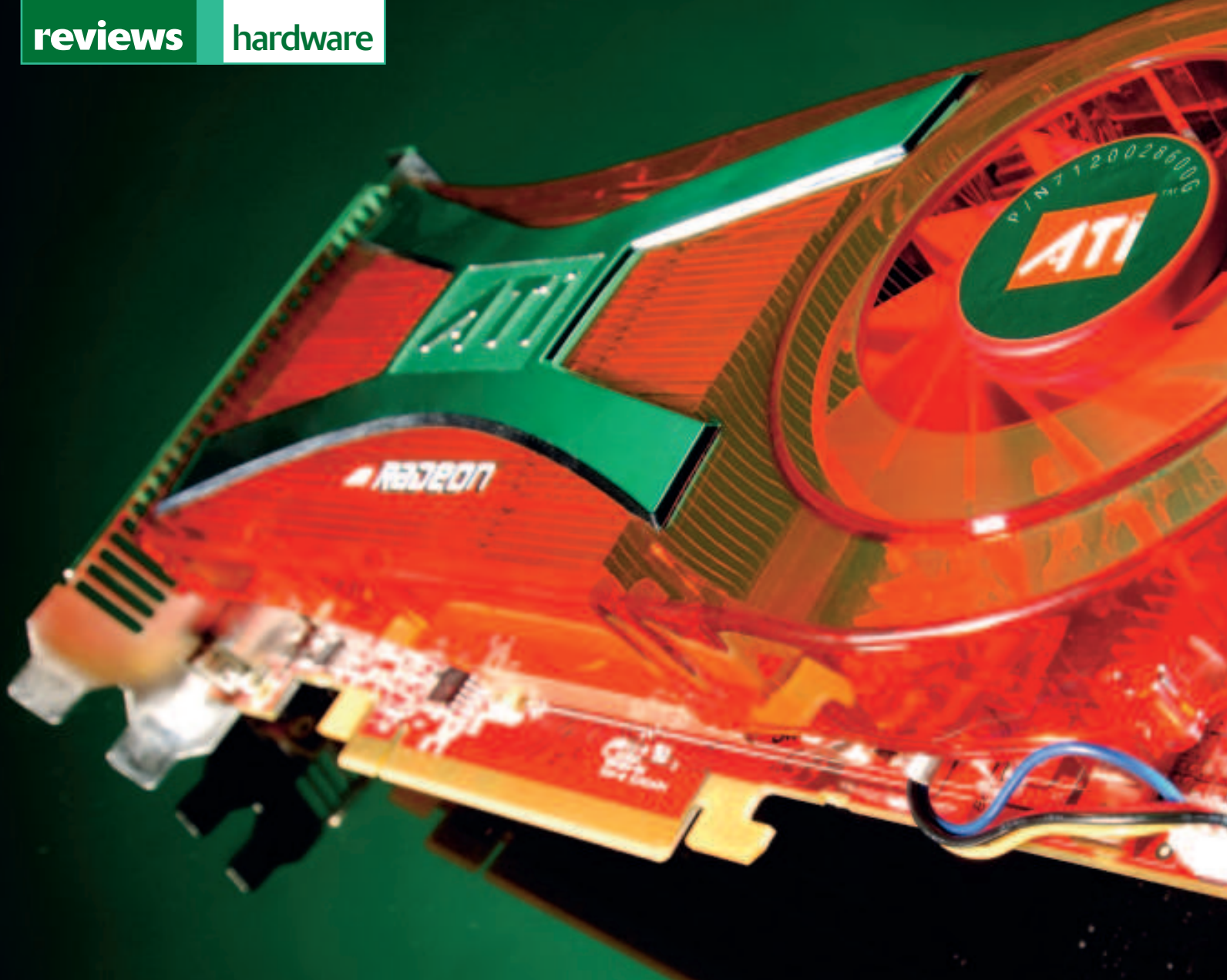
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GRAPHICS GOLIATH?

Above the clouds

The Radeon X1950XT is here, but it faces challenges from the 7950GX2, now Quad-SLI ready at last, and the approach of DirectX10. How will it fare? Al Bickham investigates

Manufacturer ATI Price £299 Web www.ati.com

NVIDIA's 7950GX2 represented a bit of a shift in the graphics-card goalposts. Two high-end GPUs bolted together in a single card may not be a new idea, but it's taken NVIDIA and its partners to do it properly and price it as close to sensible as can be – we're now seeing examples as low as £316. For the last couple of months, it's been competing with the Radeon X1900XTX

"Today's texture-tankers may seem less puissant in future, in view of DX10's imminent arrival"

on price. As single cards go, there's been no competition.

THE FUTURE'S HERE

And ATI's response? Clock the twangers off it, strap on some new GDDR4 RAM chips, and let it fly. This, then, is the X1950XT: essentially a speed-bump for the X1900XTX, with a little new tech thrown in for high memory-bandwidth measure. In essence, the X1950XT is the fastest card in ATI's hangar, and a pair of them can work wonders.

However, now's a very tough time for high-end cards. We teeter, if you'll pardon the poncy, on the brink of a new graphics technology paradigm: DirectX 10. Today's texture-tankers may seem less puissant tomorrow, in view of the platform's imminent entrance, as DX10

will bring new effects and processes which won't be visible on today's DX9 cards. Vista games will still be able to emulate DX9 effects, so current cards won't drift into obsolescence overnight, but if the choice lies between cards that do or don't support the new shinies, we might be tempted to hold on for a bit and see what happens. The next generation of GPUs – R600 from ATI and G80 from NVIDIA – will be DX10 ready, and available by the end of the year. So not only do we need to judge today's high-end cards by the other nags in the stable, we also need to work out whether now's a good time to be smoking 300 notes on a high-end luxury.

But that's always been true, hasn't it? And it all depends how soon Vista is rolled out – current whispers point to



Photos Andy Short

June 2007. And a high-end card is only high-end for about six months anyway. Still, this card has a lot going for it today, and for the foreseeable. ATI has held honours in terms of visual quality and overall shader-shunt; the likes of *Oblivion* and the latest build of the Source engine look and run better at high resolutions riding Radeon rather than GeForce cards. In addition, the latest Catalyst driver-set from ATI has introduced 12x Temporal

anti-aliasing [*What? – Ed*] for the X1950 – twice the level of AA that the X1900s could handle. To be fair, it's kind of cheating; the system effectively anti-aliases alternate frames and leaves others untouched, giving an overall eye-fooling impression of higher quality. It's clever, Tefal-head fudgery of the first order, but, fudgery that looks good in motion.

And finally, ATI has ditched that awful cooler that has ridden every high-end card since the X1800XL, in favour of something that doesn't sound like Dyson's R&D labs. In fact, the new cooler, while chunkier and weightier than the old one, is whisper-quiet. Moreover, it keeps the card resolutely frosty, which suggests there may be at least a modicum of overclocking headroom in the thermals department.

The X1950's secret, however, is 512MB of GDDR4, running at 2GHz – three times that of its 650MHz GPU. Lower latency, lower power consumption, quicker throughput and huge speeds – in theory, the X1950 will punt polygons very well at the higher resolutions. Let's see how it fares. ▀

HOW WE TESTED

Taming the beast

THE PCF TEST BED

Core 2 Duo E6700 (2.66GHz)
2GB Super Talent DDR800
Asus P5W DH (Crossfire)
Asus P5N32 Deluxe (SLI)

Good old-fashioned benchmarking. We took the X1950's peers – namely the X1900XTX in single-card and CrossFire setups, and of course the powerhouse 7950GTX solo and in SLI. We gave the 7900GTX a miss, as it's a little obsolete in

this company now. We then tested all the cards in four environments: 3DMark06, *Oblivion*, *F.E.A.R.* and *Half Life 2: Episode One* at three different resolutions – 1,280x1,024, 1,600x1,200 and 1,920x1,080. We then yelled at CrossFire, as we always do, for being a royal bitch to set up, praised SLI for the opposite, and drank very strong tea while pondering the results.

Quad SLI arrives

Four NVIDIA GPUs finally work together. Surely it's the most powerful setup ever?

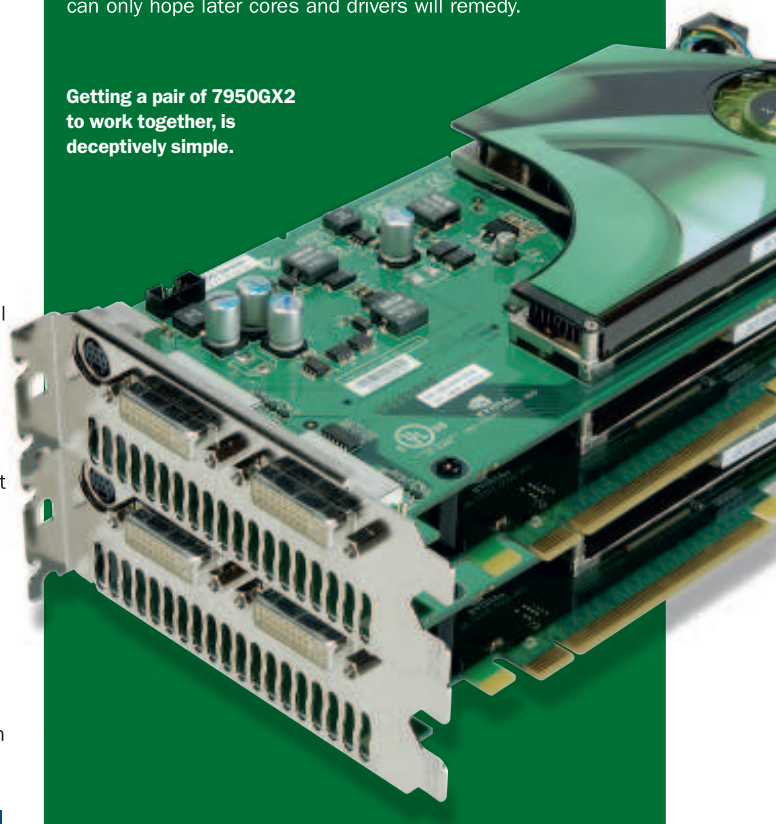
First unveiled at the CES technology trade show in January, Quad SLI was vaunted as the holy grail of graphics technology. However, many factors have crippled its progress to commercial availability. First off, the setup initially demanded more power than systems could actually supply. We saw it running *F.E.A.R.* at 2,560x1,920 back then, and performance was... woeful. With the inception of Core 2 Duo, CPU and bandwidth limitations are much less of an issue however.

Then, in June NVIDIA's 7950GX2, the first mass-market dual-GPU card came along – the card which would make Quad SLI viable, rather than an impossibly expensive system-builder's curio. But still, the drivers were so deeply flawed, they weren't released.

It's all change now, though. Drivers are available to download from www.nvidia.com, and getting a pair of 7950GX2s to talk to each other is as simple a process as can be. Quad SLI finally, at long last, works.

However, as you can see from the benchmarks overleaf, performance isn't all that. There appears to be a significant CPU overhead at lower resolutions, which means the setup actually performs worse in many tests than a single card. At higher resolutions, the second card comes into play, and performance starts looking stronger against other dual-card setups. Not that strong, however – *F.E.A.R.* is the only game in which NVIDIA's offering really shines (and shine it does – 82fps at 1,920x1,080 with full anti-aliasing and anisotropic filtering isn't to be sniffed at). Everywhere else, however, it gets a round shoeing from the ATI dual-card setups. And not just the X1950... an X1900XT CrossFire setup, the best part of a year older, outperforms Quad SLI in most instances. A disappointing entrance for Quad-core graphics then, which we can only hope later cores and drivers will remedy.

Getting a pair of 7950GX2 to work together, is deceptively simple.



When benchmarking apps attack

How does the X1950XT stack up against its bitter rivals?

KEY

Radeon X1900XTX

Radeon X1900XTX CF

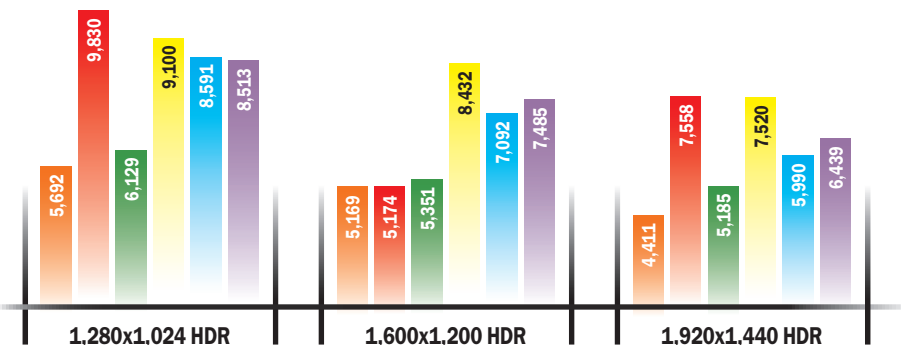
Radeon X1950XT

Radeon X1950 CF

NVIDIA 7950GX2

NVIDIA 7950GX2 SLI

3DMark06

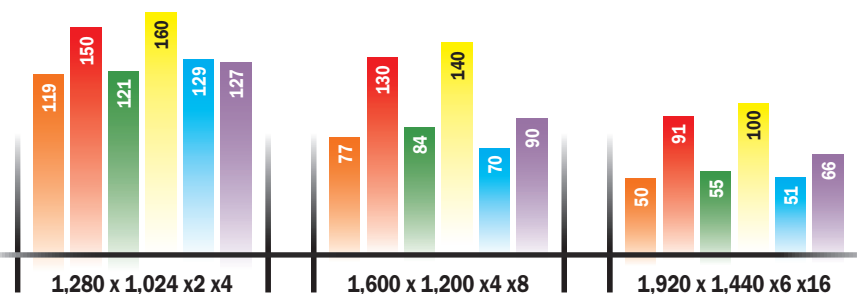


The X1950 CF pulls out 8,432 3DMarks at 1,600x1,200.

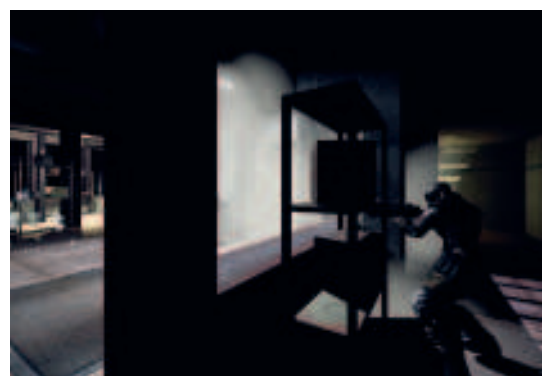
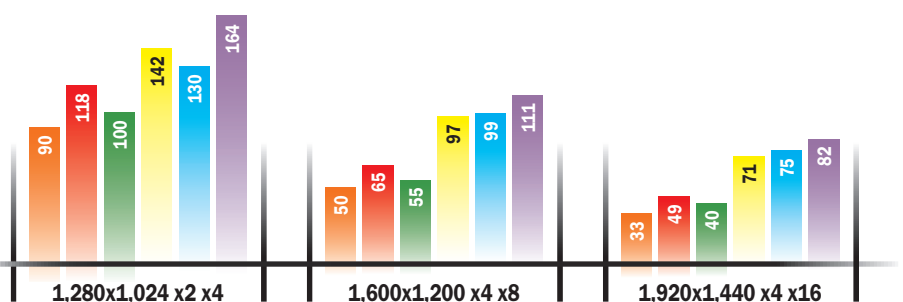


HL2Ep1: The X1950XT is consistent, but not Earth-shattering.

Half Life 2: Episode 1



F.E.A.R.

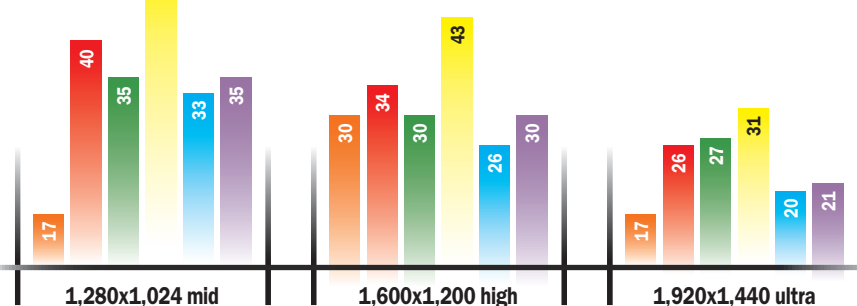


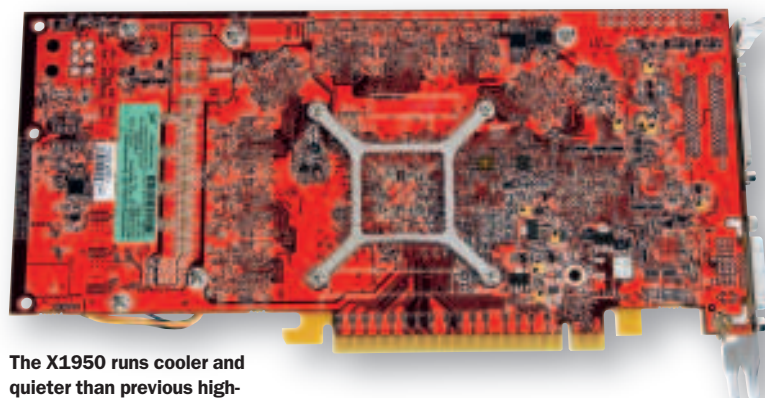
F.E.A.R.: Gory firefights are easier with a 7959GX2 SLI.



Oblivion: Wander Cyrodyll with an X1950CF for best results.

Oblivion





The X1950 runs cooler and quieter than previous high-end X-series cards.

| SPECS | GPU/RAM | GPU/RAM SPEEDS (MHz) | PIXEL PIPELINES/CORE | PRICE (£) |
|----------------------------|------------------------|----------------------|----------------------|-----------|
| RADEON X1900 XTX | R580/512MB GDDR3 | 650/1550 | 16 (48) | 320 |
| RADEON X1900 XT CROSSFIRE | R580/512MB GDDR3 (x2) | 625/1450 (x2) | 16 (48) (x2) | 580 |
| NVIDIA 7950 GX2 | G71/512MB GDDR3 (x2) | 500/1200 (x2) | 24 | 316 |
| NVIDIA 7950 GX2 (QUAD SLI) | G71/512MB GDDR3 (x4) | 500/1200 (x4) | 24 | 632 |
| RADEON X1950XT | R580+/512MB GDDR4 | 650/2000 | 16 (48) | 315 |
| RADEON X1950XT CROSSFIRE | R580+/512MB GDDR4 (x2) | 650/2000 (x2) | 16 (48) (x2) | 630 |

Which card are we carrying?

PCF's final thoughts...

What resolution do you play games at? That's the important question here, for every setup in this test excels somewhere. At 1,280x1,024, it's hard not to recommend a single 7950GX2; there's so much raw growl on tap, it powers through everything bar Oblivion and comes out on top.

At the higher resolution of 1,600x1200, however, the X1950 starts to come into its own. It performs a bit better than the X1900XTX as a single card, but its real strength lies in a dual-card setup – and *Oblivion* at every resolution, where it lords it over all comers. As dual-card setups go, there's only one setup of choice here: the X1950XT CrossFire. In every test bar *F.E.A.R.*, which seems to prefer the snuggle of an NVIDIA card, ATI's latest savages everything else, and that performance differential only increases as the resolutions and settings are upped. A pair of X1950s has more high-res grunt than any other setup going, and it's just there where Quad SLI starts running dry.

It's true: the 7950GX2 Quad-SLI setup is a bit a disappointing. You'd think four cores running in parallel would kick the rest around the ring, but it just

doesn't work that way. Clearly the G70 core isn't as equipped to run at higher resolutions as R580+, and upping the core count doesn't make as much difference as you might expect. Driver revisions may improve this somewhat.

So there it is. If you've a 17" or 19" flat-panel monitor, where the native res is 1,280x1,024, the GX2 holds court in most areas. But for supreme pixel-pushing at high resolutions, the X1950XT is the mother of all setups. The card is less handy in solo mode, given the similar price of the GX2, and as we're expecting an imminent price drop across the X1900 range, the X1900XTX may still be your best bet for high-speed kicks at a (reasonably) sensible price. There's one more DX9 card revision to come, mind – from NVIDIA, next month – before it's time for us all to move on.

84% PCF says... "£600 nets you high-res grunt. But as a single card, we're less convinced."



La Forge: "Temporal anti-aliasing engaged sir!"

Picard: "Sigh. Been at the bloodwine again Geordi?"

Trekno babble

Commander Data would be baffled...

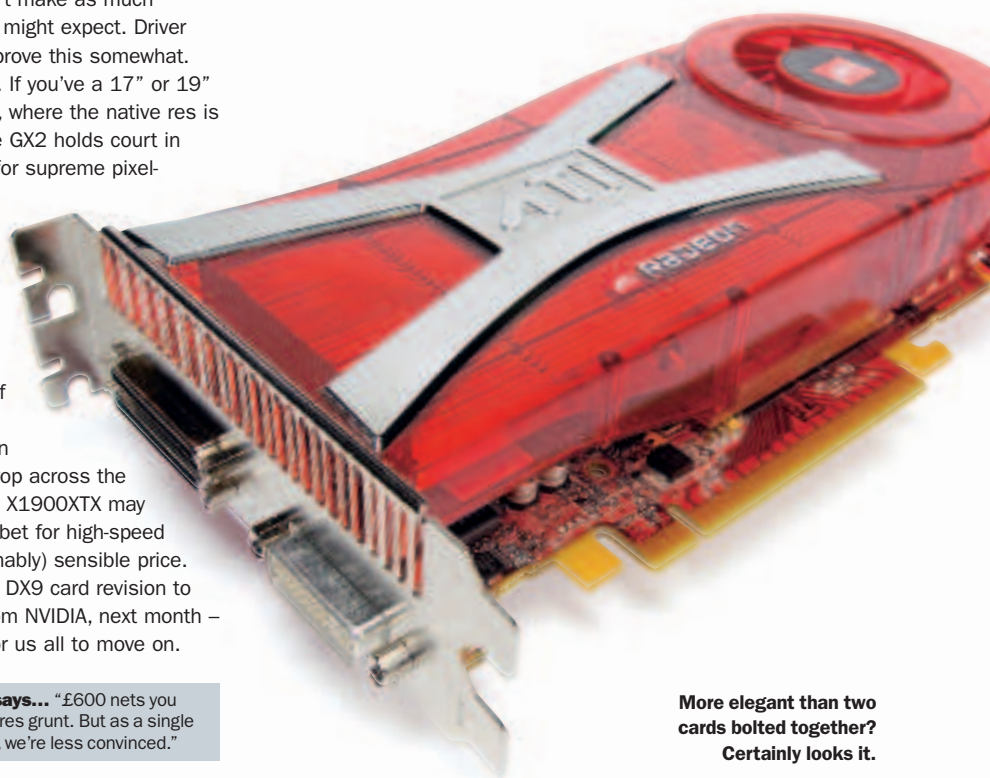
When a line is drawn on your screen, it isn't a truly straight line; it's basically a series of vertical and horizontal lines so small and close together, the overall effect emulates a straight line. However, the verticals and horizontals are visible to the naked eye as aliasing artefacts – more commonly known as jaggies.

The whole point of anti-aliasing is to reduce the appearance of jaggies by blending the colours of the jaggies with colours closer to the background. The more times this sampling process is run across an image, the closer to truly smooth the edges in the image appear.

That's it in its most basic form at least, but with the X1950 and the new catalyst drivers, ATI has introduced a new sampling system:

temporal anti-aliasing. While it's clearly Star Trek geekobabble of the first order, it's a slightly new approach to jaggy-busting. Enabling it in the driver means that, when the framerate of the game breaks 60FPS, the anti-aliasing engine switches to a new sampling pattern; it alternates the anti-aliasing between frames – on, off, on, off. However, the frames it does anti-alias are sampled twice as hard. So in *Half-Life 2: Episode One*, providing you're breaking the 60FPS mark, every other frame gets 12X anti-aliasing which, given that the majority of flat-panel monitors run at 60Hz, gives the game a smoother appearance, and with no discernible framerate hit over half the level of anti-aliasing.

There's still the question of that fluffy name, however...



More elegant than two cards bolted together? Certainly looks it.

Conroe companions

Choosing a new CPU is seemingly simple: Intel's new Core 2 überchip is top of every table. But as **Jeremy Laird** discovered, you need a great motherboard to really cash in on Conroe...

HOW WE TESTED The overclocking game

Here's a simple fact for you to fathom: motherboards sporting identical chipsets produce near-enough the same performance figures. So, why bother benchmarking at all? Well, there's nothing like a demanding battery of tests to sort the ready-for-retail rivals from the need-more-development duds. And anyway, we've a range of chipsets in this month's group test. So, we have assessed gaming, media encoding, memory bandwidth and all-round system performance for each of the boards.

But perhaps the biggest differentiator among motherboards today is overclocking

prowess. As well as noting all the BIOS options, including voltage, frequency and memory timings, we saddled up each motherboard with a Core 2 Extreme Edition chip and a couple of sticks of 1,066MHz DDR2. We then ramped the Extreme's multiplier down a notch or two, pegged the memory ratio back to 667MHz and set about investigating just how high the FSB frequency would go. With both the CPU and memory operating well within their performance envelopes, any instability or performance issues can only come from one source: the motherboard itself.

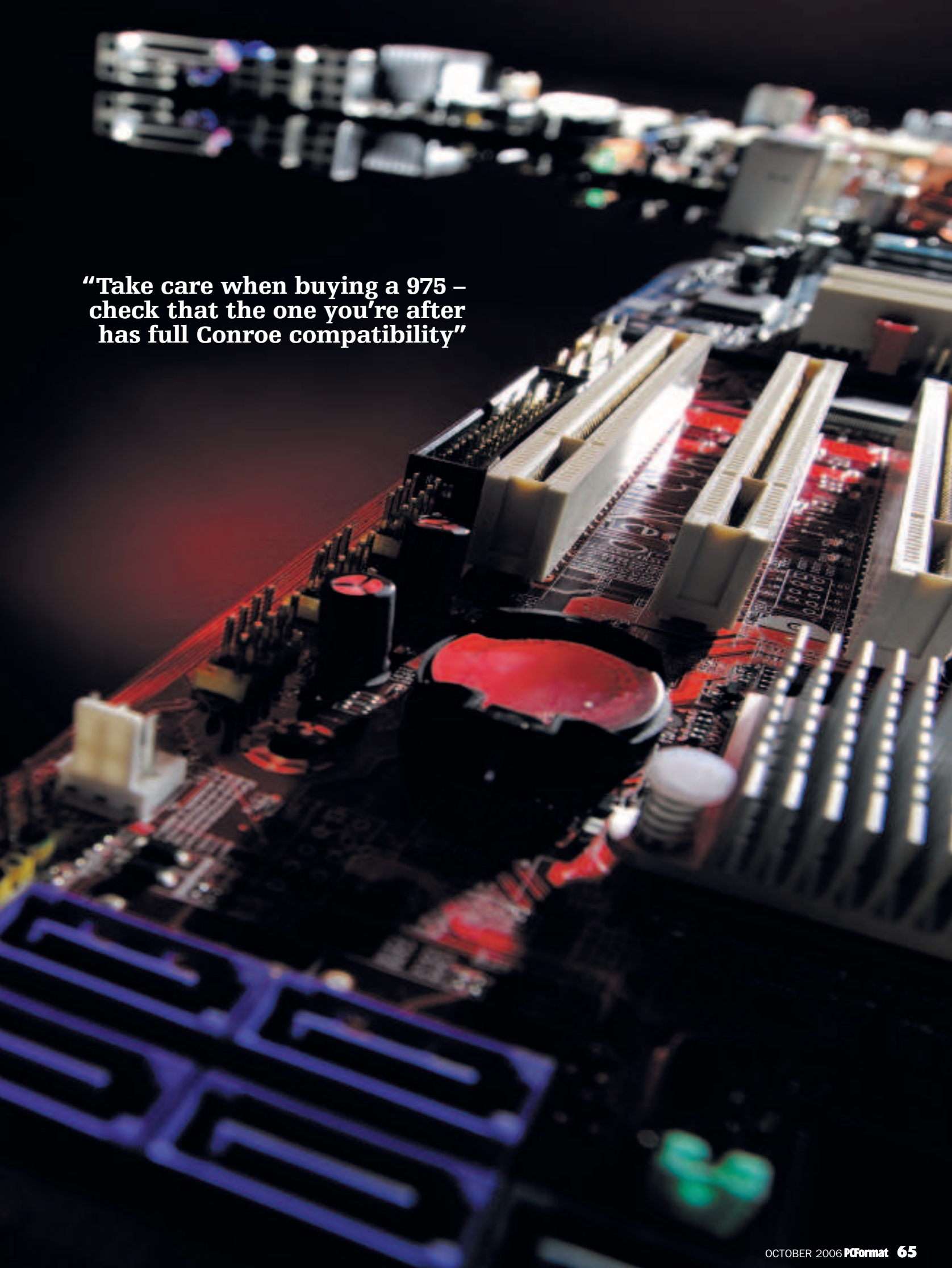
Conroe is quick. It's cool. It's an unbeatable number-crunching tool. However you slice it, Intel's all-new Core 2 Duo processor is a fabulous return to form after the increasingly hot and bothered demise of the Pentium Netburst family of chips. But if Core 2 Duo (aka Conroe at Intel's Santa Clara, California HQ) does have a weakness compared with AMD's Athlon 64 CPUs, it involves motherboard and chipset support.

Thanks to the high level of integration on the Athlon 64 itself, socket compatibility usually means motherboard compatibility. In other words, when an AMD chip physically fits a motherboard it usually works (the odd BIOS update notwithstanding). Not so for Intel's processors. With so much functionality still residing on a northbridge chip on the motherboard, including the memory controller and front side bus, socket compatibility is just a starting point. Chipset support is key. And therein lies the problem, because Intel has a nasty habit of defenestrating chipsets with a nonchalance bordering on disdain. Lest you forget, a mere 18 months ago the 925X was the LGA775-socket daddy. Since then, the 955X has effectively been and gone and Intel's top LGA775 chipset is currently the 975X. Add in the

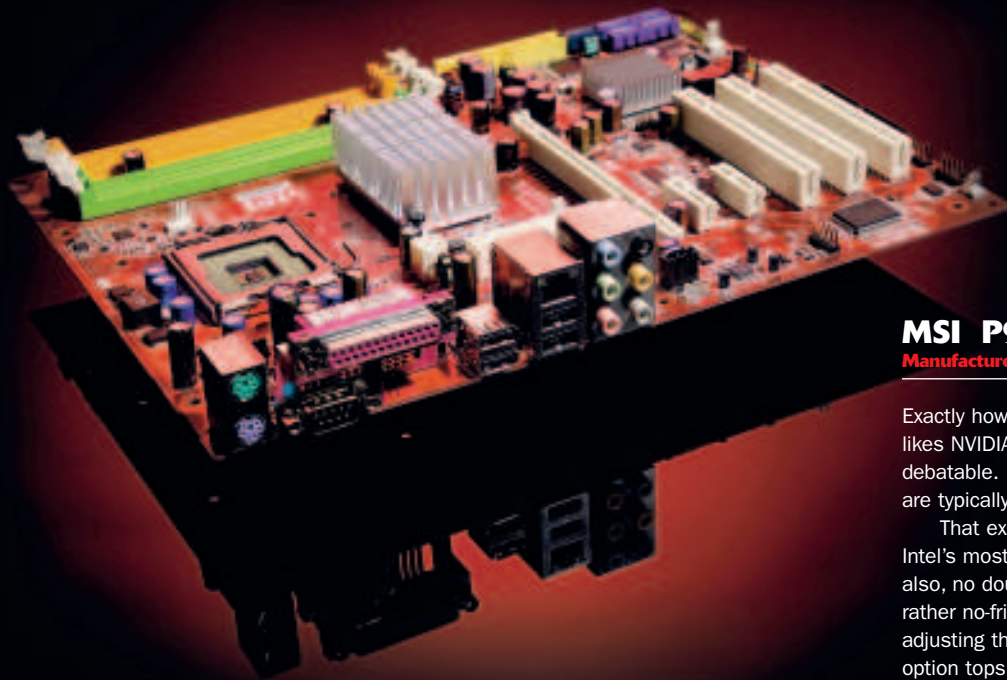
rapid transition from 915 to 945 and now 965 mainstream chipsets and you have a recipe for a whole heap of redundant motherboards.

In terms of CPU support, therefore, Intel motherboards are a veritable nightmare. On paper, only the 975 and 965 chipsets support Conroe. In practice, however, there are both 945 chipsets that do and 975 that don't. Confusing, eh? Well, it's a function of the essential similarity between Intel's chipset revisions and the fact that CPU compatibility limitations are often artificially imposed by the marketing men in California. But the good news is that Asrock, among others, has done a little tweaking to bring you Conroe support on the cheap courtesy of a 945-equipped board. Less heart warming is the fact that many early 975 boards lack the correct voltage regulators to support Core 2 Duo. So, please take care when buying a 975 – double-check that the board you buy is the full Conroe-supporting Monty.

Of course, Intel isn't the only company to offer supporting chipsets. Both ATI and NVIDIA will soon be offering compatible motherboards. But as we went to press, NVIDIA wasn't quite ready to unleash its nForce offerings, while ATI's RD600 chipset still remains a month or two away.



**"Take care when buying a 975 –
check that the one you're after
has full Conroe compatibility"**



"If you plan on spanking that Core 2 Duo within 65 nanometres of life, look elsewhere"

MSI P965 Neo

£80

Manufacturer Intel Web www.msi.com

Exactly how well do Intel's in-house chipsets compare with the likes NVIDIA's NFORCE and ATI's Xpress offers? Well, it's debatable. But you can be sure of one thing. Intel-based boards are typically pretty pricey.

That explains why the three other motherboards that sport Intel's most recent chipsets all weigh in at well over £100. It's also, no doubt, the reason why this Intel 965 board boasts a rather no-frills spec list. For starters, there's no facility for adjusting the CPU voltage in the BIOS and the FSB overclocking option tops out at 333MHz. If you plan on spanking that Core 2 Duo to within 65 nanometers of its life, then you're going to have to look elsewhere.

As for stock-clocked performance, it was compromised by our sample's refusal to run the memory DIMMs at the full 800MHz. But that's the sort of problem you'd expect a BIOS revision to sort out sooner rather than later.

68% PCF says... "Good value. Flawed but only a BIOS update away from potential greatness."

"In testing we found that bus speeds in excess of 400MHz are possible. Stunning stuff"

Asus P5W DH Deluxe

£147

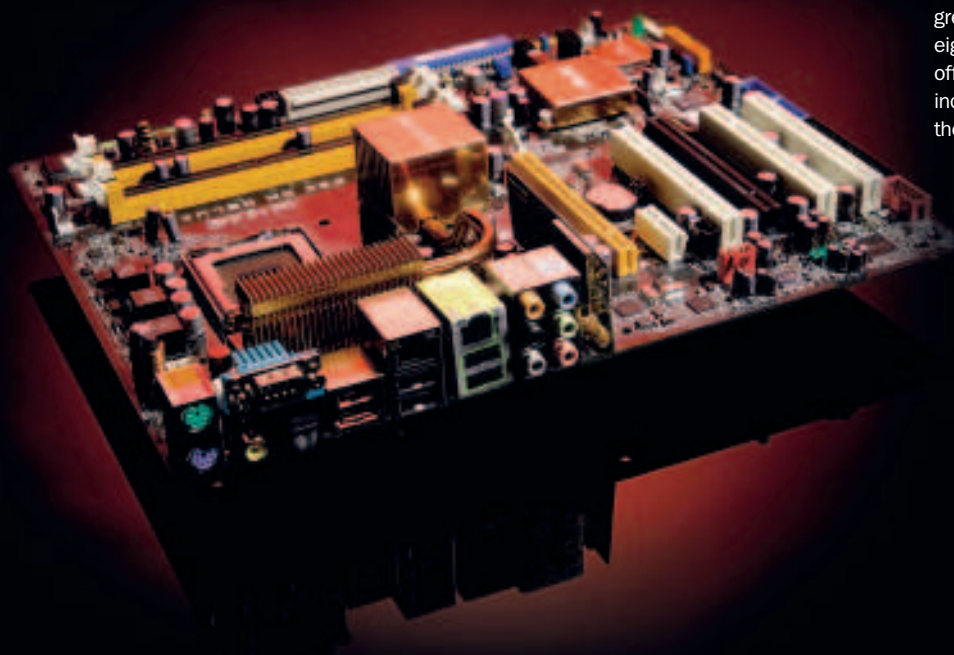
Manufacturer Asus Web www.asus.com

Premium pricing for peerless products is all very well. But can the Asus P5W really be worth triple the cost of Asrock's bargain basement board? After all, both are Conroe-compatible LGA775-socket motherboards with added support for ATI's CrossFire twin-card graphics technology.

Well, if features count for anything, the answer has to be yes. For starters, the range-topping Intel 975X chipset offers great performance and a far superior Crossfire solution, with eight lanes to each PCI-E graphics slot. The P5W DH Deluxe also offers the best selection of ports and connectors inside and out, including twin gigabit LAN and an external SATA socket. Then there's the comprehensive multimedia feature-set that includes an IR remote control unit.

However, it's overclocking prowess that really sets this board apart. The BIOS options are extremely comprehensive and in testing we found that bus speeds in excess of 400MHz are possible. Stunning stuff.

90% PCF says... "The best things in life aren't free. They cost around £147."





Intel D975XBX

Manufacturer Intel Web www.intel.com

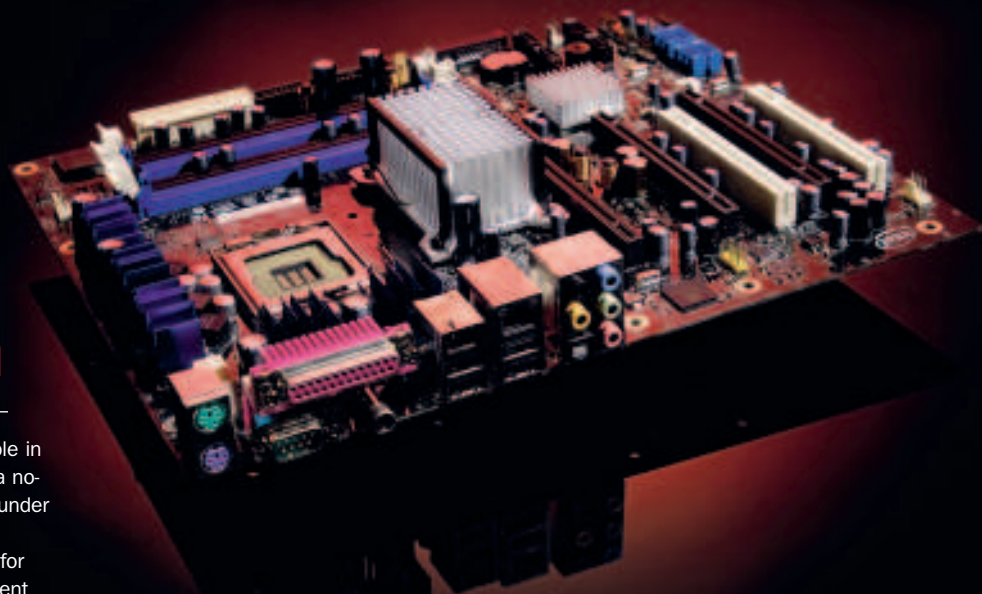
£ 141

A flagship Intel motherboard that doesn't top the price table in a five-way group test? Unusual, but then the D975XBX is a no-nonsense powerhouse, not a total-spec digital home all-rounder like the even pricier Asus D5W.

Feature-wise, the most intriguing capability is support for ATI's CrossFire dual-GPU graphics technology. With the recent AMD-ATI union, you have to wonder whether ATI will be willing to allow future Crossfire solutions to run on a competitor's platform.

Whatever, there's no doubting the performance potential of the 975X chipset. This board rules the roost in both gaming and media encoding performance and runs the others close for memory bandwidth and all-round system performance in PCMark05. As for overclocking, experienced hands will find Intel's somewhat quirky BIOS options a little limiting. But a 30% FSB overclock and full control over voltages and memory timings will be enough for most.

80% PCF says... "Solid all-round performance and spec. But for £141 we want showbiz moves."



"This board rules the roost in both gaming and media encoding performance"

Gigabyte GA-965P-DQ6

Manufacturer Gigabyte Web www.gigabyte.com.tw

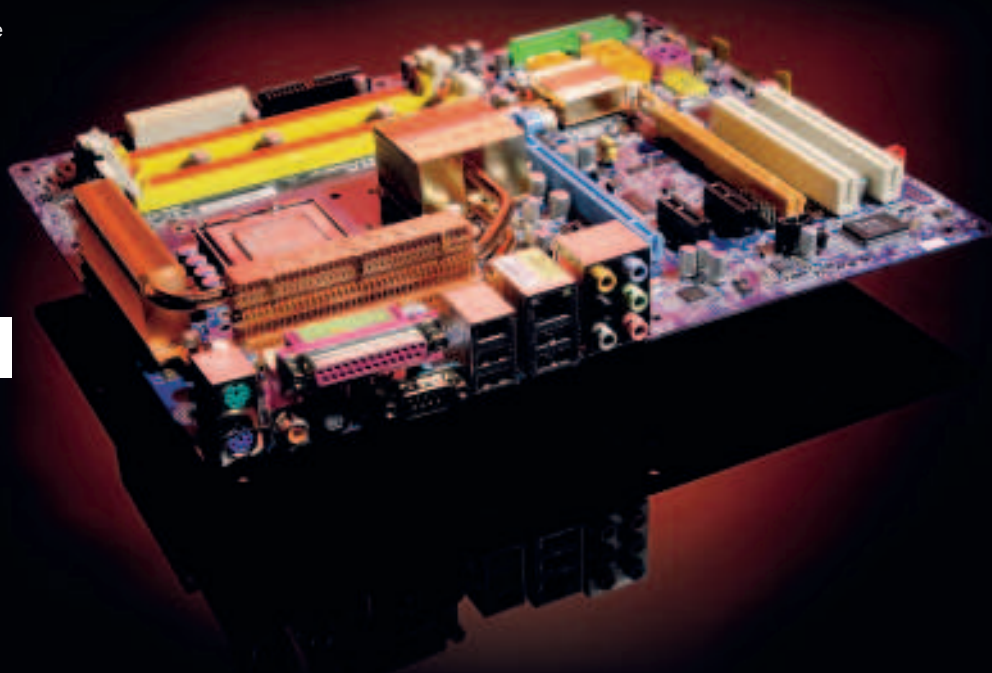
£ 133

First a word of warning. Do not be fooled by the pair of physical 16-lane PCI-E sockets you see before you. Because this Gigabyte board is not a dual-graphics capable Crossfire companion. In fact, it's an Intel 965-equipped item and that second full-length PCI-E socket has just four lanes. And it doesn't support CrossFire.

But don't let that put you off. The real world, stock-clocked performance on offer from the Gigabyte is as good as any other board here. Likewise, you won't be disappointed by the DQ6's solid feature set, which includes no less than eight internal SATA ports, an all solid-state capacitor design and a fancy-looking passive heatpipe cooling system that bodes well for overclocking larks.

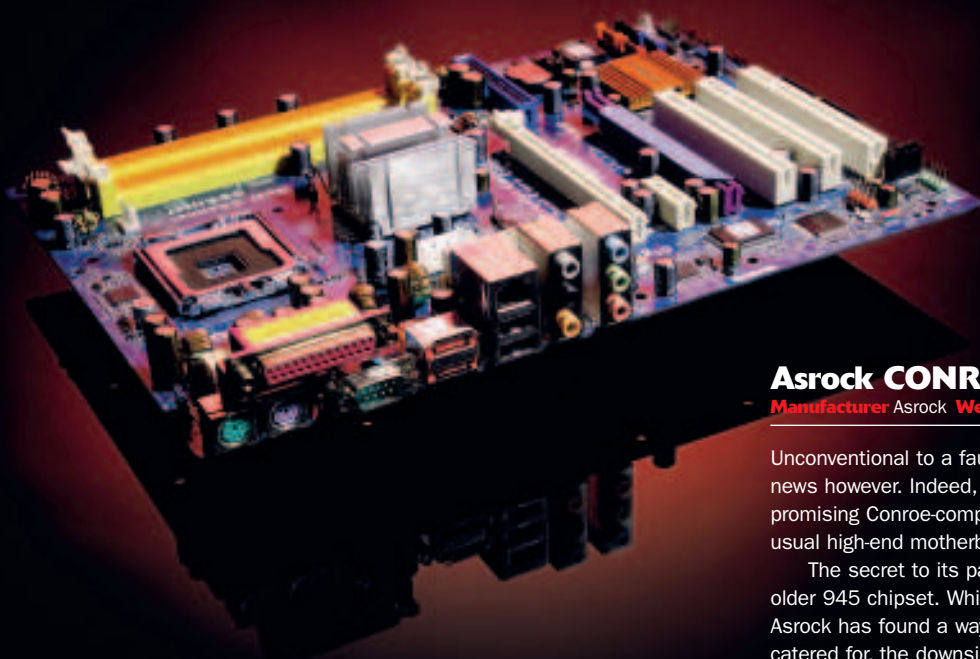
And so it proved in our testing. Granted, it can't quite match the insane 400MHz bus speeds of the Asus board. But 375MHz with total reliability is enough, for instance, to run a cheap Core 2 Duo 6300 at 2.6GHz and give an Athlon 64 FX-62 a jolly good spanking.

85% PCF says... "Nice spec, good performance and decent overclocking ability. But pricey."



"The real world, stock-clocked performance is as good as any other board here"





Asrock CONROEXFIRE-eSATA2 775

£56

Manufacturer Asrock Web www.aria.com Phone 0870 499 2499

Unconventional to a fault. That's the Asrock CONROEXFIRE. It's not all bad news however. Indeed, this is the kind of board you really want to like. By promising Conroe-compatible and Crossfire-supporting thrills without the usual high-end motherboards bills, it's an awfully tempting option.

The secret to its parsimonious price tag, of course, is the use of Intel's older 945 chipset. While Intel has said the 945 doesn't support Conroe, Asrock has found a way. But while Conroe's 1,066MHz bus frequency is catered for, the downside to the 945 chipset is limited to DDR2 667MHz memory (the other boards here hum an 800MHz tune). Similarly, don't expect top-notch Crossfire performance – the second PCI-E graphics slot sports just four lanes (half what you need, and a quarter of what you really want). And if overclocking is your bag, steer well clear. Essentials such as CPU voltage, CPU multiplier adjustment and RAM timings are conspicuous by their absence in the BIOS menu.

65% PCF says... "Terribly cheap. But mediocre stock-clock performance and piddling poor overclocking disappoint."

"The secret to this parsimonious price tag is, of course, the use of Intel's older 945 chipset"

The one to watch

The perfect Core 2 companion. But at a price...

Core 2 Duo is an easy choice for powering your next PC. But picking between Intel's pair of official Conroe-supporting chipsets is much more of a palaver. In theory, the 975X is Intel's flagship offering, its highest performing chipset and the choice of the enthusiast.

However, the 975X has been around for more than six months now, and the newer 965 is certainly superior in some regards; its faster, lower-latency DDR2 memory controller being a good example.

But as our benchmarks prove, there's nothing between them in terms of real-world performance. The fine detail of the board implementation is what it's all about, therefore. With that in mind, we're a little disappointed that this group doesn't contain an affordable motherboard that offers good overclocking

abilities. MSI's P965 comes closest. With a BIOS update to include CPU voltage control and a little more FSB leeway, you could be looking at a test winner.

Until then, you'll have to pay your money and take your choice of the three £130-plus boards. And at this rarefied end of the market, Asus's PW5 proves too tough to beat. It's heaving with features, overclocks like the clappers and looks fairly fancy to boot.

Which just leaves us with just enough space for a final word on the Asrock. It's a brave effort and we're glad that it exists – if only to keep other board makers (as well as Intel) on their toes. But it's overclocking that makes those entry-level Core 2 chips so exciting. And that's exactly where the CONROEXFIRE unfortunately fails to deliver.

| BENCH MARKS | HALF LIFE 2: EPISODE 1 | MEMORY BANDWIDTH | PCMARK05 | WMV9 VIDEO ENCODE |
|-------------------------------|---------------------------|---------------------|----------|----------------------|
| ASROCK CONROEXFIRE-ESATA2 775 | 162FPS | 4,803 MB/s | 6,945 | 1min39sec |
| ASUS P5W DH DELUXE | 173FPS | 5,391 MB/s | 7,576 | 1min37sec |
| GIGABYTE GA-965P-DQ6 | 172FPS | 5,449 MB/s | 7,682 | 1min34sec |
| INTEL D975XBX | 176FPS | 5,431 MB/s | 7,507 | 1min33sec |
| MSI P965 NEO | 163FPS | 4,845 MB/s | 7,623 | 1min37sec |

More benchmarks and details can be found on your DVD

"Asus's PW5 proves too tough to beat, heaving with features"

ROUND-UP

QUIET RIOT

Costlier means cooler and quieter, right? **Alex Cox** uses his highly tuned predatory senses to find out...

Beige. The word strikes fear into the hearts of all those who've been using PCs for a few years. Why did it take so long to for pretty PC cases to arrive? Did spray paint only come in off-white in the Nineties? Was looking at a colourful case as socially unacceptable as staring at an exposed piano leg in Victorian England? Whatever the reason, things are different now. Cases are aesthetically judged these days, and there's kudos to be won thanks to flashy design, cooling and noise – or rather, the lack thereof.

Every case worth its salt has a pair of fans, one at the front and one at the rear, to direct airflow over your mobo and ensure your components stay frigid and rigid. This is a uniform trait amongst our subjects in this test, and all but the Zalman Fatal1ty also include a separate side-mounted pipe to pipe away hot air directly from the CPU cooler; your PC parts are safe in these hands. But noise, that perennial downside of cooling, is often

HOW WE TESTED

Each chassis was filled with a 300W QTechnology PSU, a GeForce 6800, and an ASUS mobo with an Intel cooler. Since our criteria were sound and temperature output, we tested with a mic and a thermometer. The microphone enabled us to take samples at four points on each case, which we then

averaged out to give us the final scores for each rig. We also attached two thermometers to each side of the chassis, taking the mean temperature between each reading as the setup was taxed with 3DMark06. We encourage you try these tests at home and compare your results with these!

difficult to bear. Unless a chassis is solid, and its fans large and well-weighted, you're in for a noisy ride. Bear in mind that we tested these cases as new, at their peak of efficiency. If your setup starts out noisy, it'll be cacophonous by the time your fans are coated with grime and the bearings have had a chance to wear.

Finally, the build quality has become vitally important. As a *PCFormat* reader, you're in and out of your case with greater frequency than most, so it's a joy when cases like the Zalman aide and abet you with so much flair. There's little in this test that stands out, at least internally, except for the excellent drive-mounts and easily opened door of the Fatal1ty chassis. But are you prepared to spend that much for them? **PCF**



Triton GZ-XX1CA-SNS

£50

Manufacturer Gigabyte Web www.giga-byte.com

Gigabyte's effort seems to be made of the thinnest material of all – or at least the sharpest. As an understated under-desk PC container, though, it's the best looking of the four we've got on test. No needless windows or intrusive LEDs, just a clean aluminium finish and not much else. This sparseness continues inside the machine, too. Although

the PCI panel has tricky plastic clips to hold your cards in place, and there's a selection of plastic drive clamps to reduce screw consumption, the insides are bare.

To its credit, however, the case managed some good scores. It was a little warmer than the other three, but comfortably the quietest of the lot. And if that's all you're after, this is the way forward.

Drive bays 5 x 5.25, 5 x 3.5 (two exposed)

Cooling 1 x 120mm front intake fan, 1 x 120mm rear exhaust

Component locking mechanism Plastic clips

Other Water cooling retaining holes, tool-free side panel

81% PCF says... "This is a real contender. It's as quiet as a dead mouse doing its very best not to squeak too much. In space."

Mystique 632 Black

£89

Manufacturer Cooler Master Web www.coolermaster-europe.com

Those Cooler Master cats may be satisfied living in a world of Borg pods and big orange glowing lozenges, but we're not so sure they're on the right aesthetic level with this case. It's rather freaky looking. Points have been awarded, however, for the top-mounted ports, and the fact that the smooth-moving space-doors covering the front of this chassis make a

marked difference to the amount of chilly air that gets through.

With a lighter metal stock than many cases, it's no surprise that the Mystique's frame heats up fairly quickly, and we felt hotspots appear on the top-rear and all over the base. But the combination of quiet fans and a splendidly tool-free solid design means you can find solace basking in its warmth, nonetheless.

Drive bays 4 x 5.25, 6 x 3.5 (two exposed)

Cooling 1 x 120mm front intake fan, 1 x 120mm rear exhaust

Component locking mechanism Screws with retaining brace

Other Water cooling retaining holes, magnetic saloon door-style facade, tool-free side panel for easy access

74% PCF says... "A really interesting stab at individualist design, and well built, but the aesthetics are... risky."

Fatal1ty FC1-WSVG

£229

Manufacturer Zalman Web www.quietpc.co.uk

Life is sweet for pro gamer Jonathan 'Fatal1ty' Wendel. He has a globetrotting job thrashing people at *Painkiller*, more endorsements than Jeremy Laird's driving license. The latest product plastered with his handle is this hulking chassis constructed of 5mm black anodised aluminium. Resplendent with red LEDs, which have become something of a Fatal-one-tee

trademark, the case also has twin front fans for cooling but – surprisingly – it's noisier than a wind tunnel.

However, you'll be happy with the build quality. Zalman's hammock-style drive bay is an inspired design, taking nothing but a shove to get drives properly secured and seated, and the solid door sets this apart.

Drive bays 4 x 5.25, 4 x 3.5 (one exposed)

Cooling 2x 92mm front intake fans, 1 x 120mm rear exhaust

Component locking mechanism Screws

Other Tool-free hard drive chassis, no-maintenance hinged door

75% PCF says... "Oozes gravitas thanks to its weighty construction, but it's noisy – and very, very expensive indeed."

Turn over for the winner...





WINNER!

Pandora CA3030

Manufacturer Enermax Web www.enermax.co.uk

£34

There's a lesson to be learned for those that want to use spray-painted grey mesh as part of a black case: all the nifty drive-covering flaps in the world won't save your case from looking like a disastrous early Eighties boombox.

The crushingly dated appearance of Enermax's offering doesn't diminish its usefulness, of course, but we feel a certain cosmetic flair should be on offer,

considering the bare insides and lack of frontal Firewire ports.

On the whole though, the box is excellent value. There's a consistency to its audible output – we definitely wouldn't call it loud – but the thin steel panels which make up the case have a propensity to get rather hot after a short while. For something so cheap, though, you're in pretty good hands here.

Drive bays 4 x 5 .25, 5 x 3.5 (one exposed)

Cooling 1 x 120mm front intake fan, 1 x 120mm rear exhaust

Component locking mechanism Screws

Other Pop out front dust filter, tool-free side panel

83% **PF** says... "Say hello to the king of low-end cases. Just try not to think about the unrepentant Eighties styling."

Cases: the road ahead

Quiet cooling is one thing that's unlikely to get much better. Wind is one of those noises that's tricky to control. But cases aren't just moving down the silent route, because the quality of the internals is becoming more and more important. If a case doesn't have plastic drive-grips lining its five-inch bays, we're not interested. You'll see a lot more cute innovations, along the lines of Zalman's noise-dampening hard drive cradle and the built-in water cooling that Gigabyte is beginning to offer, making their way into the chassis of the future.

But is it time for another new form factor? BTX didn't catch on, and more accurately placed cooling may well be required for tomorrow's GPU-stuffed monsters. We're already seeing extra vents (like those on the side of the Mystique) designed to draw more air in over the graphics cards. The problem is that the ATX form factor places PCI slots in a particularly awkward position for the airflow of current cases to reach. Moving everything that's warm to a more central location – perhaps even confining it to a separately cooled tunnel of love – could present stacks of new cooling possibilities.

This is a sizeable piece of kit – but the price tag's pretty hefty as well.



CASH MACHINE

Cyberpower Gamer Infinity 990



Pure performance comes at a cost – almost £2,500. Oh, how our wallets groan...

Price £2,495 Manufacturer Cyberpower Web www.cyberpowerpc.co.uk

PCF format is scribbled for your pleasure in a lovely office, complete with big shiny windows that look out on swaying green trees down by the river. It's a charming location. But PCF's noble postroom people, on the other hand, work in an entirely different building on the other side of town. As a result, when something of the dimensions and weight of this rig gets sent to PCF for review, we can't help but feel rather sorry for the poor chaps as they lug it up the stairs to our base of operations.

This PC is spine-crushingly heavy and, well, *huge*. Cyberpower has filled the spacious CoolerMaster Stacker case with all manner of high-end gubbins to encourage ridiculous performance, and the case itself comes with its own CPU water-cooling set up. In every way, the Infinity 990 demonstrates a level of excess that hasn't been seen since Caligula's stag night.

Throbbing at the middle of this metallic monolith is the Core 2 Duo Extreme Edition, which revs to 2.93GHz and makes mincemeat of all other chips. The effortless maths-guzzler is backed up by NVIDIA's latest GPU, the 7950GX2, and 2GB of Corsair's XMS RAM. All

things considered, it's an utterly formidable spec.

POWER PLAY

Predictably, the 990 chews the benchmarks up with gusto, and with the Infinity 990, you're paying for a rig that will, in tandem with the Viewsonic VX922

"Predictably, the 990 chews the benchmarks up with gusto"

19-inch panel, enable you to play any current game at the native 1,280x1,024 resolution with every single graphical flourish enabled. After a fairly hefty pummelling, 3DMark06 surrenders

8,338 marks, and F.E.A.R. is similarly cuffed aside at 100 frames per second, even with x4AA, x16AF and the dreaded soft shadows enabled. *Quake IV* positively sings at 174FPS, and *Half-Life 2: Episode One*, with HDR in full effect, found 127FPS. It's also worth mentioning the RAID array that combines

two 10,000rpm drives for swift disc access when and where you need it.

Clearly, such performance doesn't come cheap, and for the vast majority the Cyberpower is beyond what is affordable. Also, while the performance is stonking, we'd like to see a few of the trimmings given a bit of a boost. For example, the Logitech Wireless Desktop included is fairly standard, and we can't help but feel that at £2,500, we could have been furnished with a much bigger monitor. Still, with anti-aliasing and anisotropic filtering up the wazoo, that 1,280x1,024 resolution will look all kinds of gorgeous.

Mike Channell

Processor Intel Core 2 Duo Extreme Edition
Motherboard Intel D975XBX
Memory 2GB Corsair XMS2
Graphics NVIDIA GeForce 7950 1GB
Storage 398GB (2 x 10,000rpm 74GB, 1 x 7,200rpm 250GB)
Optical 1 x DL DVD±RW, 1 x DVD-ROM

Extras Logitech cordless Internet Pro Desktop, PCI wireless card, card reader, Logitech 5.1 speakers

84% PCF says... "The Infinity 990 is quick to impress, but you'll need to sell a kidney to fund it."

| BENCH MARKS | 3DMARK06 1.280x1.024 | F.E.A.R. 1.280x1.024 4xAA, 16xAF | QUAKE IV 1.280x1.024 4xAA | HALF-LIFE 2: EPISODE 1 1.280x1.024 4xAA 8xAF |
|--------------|-------------------------|--|---------------------------------|---|
| INFINITY 990 | 8,338 | 100FPS | 174FPS | 127FPS |

More benchmarks and details can be found on your DVD



UNASSUMING AUDIO

Roth Audioblob 2

Hellbent on high-quality PC audio without irritating trailing wires? Try this for size...

Price £149 Manufacturer Roth Web www.opposition-group.co.uk



There are many differences between men and women: dangly bits and number of shoes owned are obvious examples, and another is differing attitudes towards surround sound. How many times has your other half demanded you install *more* speakers at home? *Exactly.*

So, hats off to Roth, as this system is a good compromise for anyone who needs to declutter their home while retaining a decent audio setup. Rather than going for virtual sonic sorcery to make up for the lack of rear speakers, Roth has made the core of the system as good as possible, and the attention to detail really pays off.

BOTTOM END

Take the subwoofer. It sidesteps the recurring problem of vibration by using inverted-cone rubber feet. This elegant solution does away with the distortion that can effect cheaper boxes. The satellites are well made, even though they're a bit of an aesthetic letdown. Fixing speaker cable to the rear clips of the satellites is fiddly, too. So what about the performance?

Even with 'only' 28 Watts on tap, the sub generates all of the necessary rumbles. Fortunately, all

of that oomph is tightly controlled, and the lower frequencies never unbalance the overall sound in games or music – the Audioblob 2 is a revelation to anyone who's only heard cheaper 2-in-1 systems such as the Creative iTrigue. The satellites are crisp and clear, too.

Unfortunately, we fear that the Audioblob may lack the grunt demanded by hardcore gamers and headbangers, and you could pick up a six-channel system for £150. If Roth could shave another £50 off the price this would fly off the shelves, but as it stands it'll appeal to well-heeled audiophiles who don't want clutter or wall-destroying volume. **Geoff Harris**

| | |
|-------------------------------------|--------------------------|
| Number of channels | 2.1 |
| Speaker power | 12 Watts RMS per channel |
| Subwoofer power | 28 Watts RMS |
| Satellite frequency response | 80Hz-56KHz |
| Subwoofer response | 42Hz-80KHz |
| Signal to noise ratio | 85dB |
| Wireless | Rear speakers only |
| Remote control | No |

80% PCF says... "Pricey for only three speakers, but nice punchy sound."

DEAFENING, YET TIDY

Creative GigaWorks G550W

Probably louder than war, but at least it won't clutter your living room carpet

Price £220 Manufacturer Creative Web uk.europe.creative.com

Creative is well known for producing affordable, reliable kit, and its ProGamer range is well respected. There is not a massive amount of difference between the £190 G500 and this new ProGamer G550W, except for the telltale W on the end, which stands for 'wireless.' The system is not a totally wire-free zone, but does remove the need for cables for the two rear speakers.

In terms of specs, the G550W offers 36 Watts RMS per satellite, and kicks out 130W from the sub. This means it's crushingly loud, and would have put a high-end home cinema system to shame a few years ago.

With that kind of power at its disposal, little fazes the G550W, and games sound particularly fantastic if you have a good quality soundcard/decoder to do the speakers justice.

It's the same story for music and movies, though the Creative's home entertainment credentials are undermined by the ugly, decidedly nerdy design – we're not sure why Creative still can't make its speakers look as good as they sound after all these years. The other problem, and this is more

subjective, is the over-eagerness of the bass that roars forth from the fancy dual-ported sub; the seismic rumbling can get a bit much when you just want to relax with a DVD or some music. Or maybe we're just getting old...

WIRED FOR SOUND?

Setting up the system is very easy, thanks to the excellent documentation, and the remote is easy to use, too. There's not much more to say about the excellent G550W, but are you prepared to cough up another £30 for the wireless option? We'd pay the extra over the G500 to lose the rear wires, but if money is tight, you might just decide to put up with the spaghetti. **Geoff Harris**

| | |
|------------------------------|---------------------------|
| Number of channels | 5.1 |
| Speaker power | 36 Watts RMS per channel |
| Subwoofer power | 130 Watts RMS |
| Frequency response | 35Hz-20KHz |
| Signal to noise ratio | 85dB |
| Wireless | Rear speakers only |
| Remote control | Yes |
| Warranty | Two-year limited hardware |

85% PCF says... "A top-notch system for all seasons, and cable-free sats too."



CORE BLIMEY

NVIDIA 7900GT Signature series

NVIDIA's top midranger gets the amphetamine treatment...

Price £276 Manufacturer EVGA Web www.scan.co.uk



So, 5,865 3DMarks in 3DMark06 then? That's more than an X1900XTX or 7900GTX can comfortably muster, and a colossal feat for a midrange card. This is what EVGA's premium Signature Series cards are all about: taking standard GPUs and clocking the choppers off both GPU and RAM, so much so that this midrange card can outperforming high-enders

Given the vanilla 7900GT's core and RAM normally run at a reasonably sedate 450/1,320MHz, and the Signature Series' twirl at 600/1,600MHz, it's not hard to see why. It gets the job done a lot faster than the standard-issue version,

and that's what we're all after. It's still a 7900GT at heart however, not a card known for it's ability to drive panels at high resolutions, so the grunt on offer here is most at home in a 1,280x1,024 environment. And here it excels – 120FPS in *Half Life 2: Episode One* and a healthy 85FPS in *F.E.A.R.* won't garner complaints from anyone.

MORE POWER

EVGA also offers an upgrade program so that, within 90 days of purchase, if the card you bought isn't as grunty as you'd like, they'll give you a full refund towards a new, more powerful card, along with priority phone support if anything

goes wrong. It's a level of customer service unusual by today's box-shifting standards.

However, with this card, you pay the price for that extra speed and service – the Signature Series 7900GT will raise an eyebrow or two at its £276 price tag, which is decidedly high-end territory; for a mere £25 more, you can be looking down the speedy end of an X1950XT.

Still and all, it's a remarkable feat – without investment in some fairly serious cooling, you'd find it close to impossible to clock a vanilla 7900GT as high as this.

After all, it's outperforming a 7900GTX – on a stock 7900GT cooler. At 1,280x1024, your games will thank you for it – even if your wallet might require immediate medical attention. **AI Bickham**

GPU G73

Memory 256MB GDDR3

Core speed 600 MHz

RAM speed 1,600 MHz

Pixel pipelines 24

API support DirectX 9, OpenGL2.0

Shader support HDR, SM2, SM3

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80% PCF says... "The fastest pre-overclocking we've seen – but it'll cost."

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Photo finish

Matthew Richards runs the rule over the latest picture producers

HOW WE TESTED

An inkjet inquisition

We used a number of images taken on D-SLR and compact digital cameras to test for sharpness, tonal range, brightness, contrast, accuracy, rendition of skin tones and saturated colours. More specific tests included the printers' ability to recreate fine lines in pictures, and to print adjacent blocks of very different colours, without those colours bleeding into one another.

There are various factors that can adversely affect any rendered inkjet photo print. Typical maladies include banding

caused by partially or fully blocked nozzles in the print head, and pinpricks in the paper due to an over-zealous transport system.

While inkjet printers are relatively cheap, they can be expensive to run. We armed each of our test models with a full set of new cartridges and printed a variety of photos until we ran them dry. Over the page, you'll find running costs for ink, although you should also factor in the price of photo paper, which we haven't included as there's such a wide range to choose from.

Last month we gathered together the latest and greatest dye-sublimation 'postcard' photo printers. Our group test revealed that image quality is pretty good and running costs are often the better side of average. However, some of the newest inkjet printers blow them out of the water.

For starters, you're not limited to 10x15cm prints, but can 'go large' – all the way up to borderless A4 if necessary – in order to do your favourite digital photos full justice. Another plus point with inkjet printing is that you tend to pick up odd little marks here and there with dye-sub printing, thanks to dust that invariably ends up on the print heads or in the transport system,

which you simply don't get with inkjet printers.

Best of all, the print quality of inkjet photo printers has been steadily rising over the last few years, to the point where they now rival or even beat the quality of conventional photo lab printers.

Manufacturers have also been working to outdo each other in the running costs stakes, as well as refining their dye-based and pigment-based inks to enable better colour brilliance and longer-lasting results. Indeed, some inkjet prints should theoretically last over 250 years if stored correctly in a photo album, again outstripping conventional silver halide printing. There's never been a better time to start printing your prized digital images at home.

Printing secrets

RESOLUTION: Don't get hung up on looking for the biggest numbers. 4800 x 1200dpi is more than enough for razor-sharp prints.

DROPLET SIZE: Smaller droplets enable smoother colour graduations and finer detail. The norm is virtually microscopic two picolitre droplets.

INDIVIDUAL INK TANKS: In theory, individually replaceable tanks can save you money, but it often doesn't work out that way in practice.

PICTBRIDGE: This enables you to hook up most digicams direct to the printer. Extremely convenient.

LCD: Printers that use a media card reader should have an LCD preview screen, otherwise you have to print an index print of all your photos to see which ones you want to enlarge.

Photo realism

The truth behind the specs

Noise

| | |
|---------------|--------|
| Canon iP4200 | 34.2dB |
| Canon iP6220D | 43dB |
| Epson R220 | 45dB |
| Epson R240 | 40dB |
| HP8250 | 48dB |

Size

All the printers are A4 models, so they all take up a similar size on the desk. The only real exception is the HP Photosmart 8250, which is a little bigger than the other printers with width, depth and height measurements of 447x385x160mm. It's only really the depth which is an issue as, in old money, the 8250 is about four inches deeper than some of the other models.

There's a noticeable difference between the printers when it comes to weight. The lightweights of the group are the Canon iP6220D and Epson R240, at 3.7Kg and 5Kg respectively, which is a bit surprising as these are two of the printers that include media card readers and LCD screens for direct printing. The heavyweights of this group test are the Canon iP4200 which is 6.5Kg, and the frankly rotund HP 8250, which weighs in at a decidedly hefty 8.5Kg.

Manufacturers' specs

It's easy to be taken in with manufacturers' claims of umpteen pages per minute print speeds but, naturally, things slow down a lot for photo printing, where there's no blank space on the page. For photo printers, manufacturers normally quote print speeds for 10x15cm photos outputted at 'normal' quality settings. However, these can still be slightly inaccurate as they often don't take into account the processing time on the part of the PC, after you've hit the Print button, while high resolution photos of, say 10Mp, can take a little longer than small pictures from a camera phone.

For each of the printers, we found that the manufacturers' claims were basically very accurate, which is not too surprising in these days of the suing culture. What's more important to note is that when you switch from normal quality mode to best quality setting, you invoke the maximum resolution of the printer and print times can rise dramatically. For example, the time taken to output a 10x15cm photo print on the Canon iP4200 rose in our tests from 51 seconds to almost one and a half minutes, and took almost twice as long on the Canon iP6220D. Similarly, both Epson printers took double the time to print a 10x15cm photo in best quality mode and even the speedy HP 8250 took 1:38s as opposed to 53 seconds.

Start-up time

Start-up time is a moveable feast. Unlike laser printers, which need to warm up their fuser sections, an inkjet printer should be ready to go as soon as you switch it on. Many times, this is certainly the case, although sometimes inkjet printers feel the need to re-prime their print heads, which can involve faffing around for half a minute or so. Either way, the 'first print' time should be much less of an issue than it is with laser printers.

Onboard features

When it comes to onboard goodies, the Epson R220 simply doesn't have any, making it useless for direct photo printing from either digital cameras or memory cards. The iP4200 is also very basic but does at least offer PictBridge along with dual input trays and its particularly refined for printing direct onto compatible CDs and DVDs.

The Canon iP6220D, Epson R240 and HP 8250 all have PictBridge as well as multi-format media card readers and 2.5-inch LCD screens for preview and control menu purposes. We found the Canon direct printing interface particularly intuitive, with handy tools for fixing red-eye, brightening faces and smoothing out jagged lines, all without the need to switch on the PC. As well as the card reader and PictBridge port, there's also an IrDA interface for use with camera phones and PDAs, as well as an optional Bluetooth adaptor. HP also offers a Bluetooth adaptor for the 8250, as well as a Wi-Fi option.

By comparison, the Epson R240's optional connectivity add-ons and standalone printing facilities are a little basic, but you can still preview all your pictures on its LCD screen and choose what size you want to print them out. And for those who like deciphering large portions of the alphabet, the memory card readers for all three printers that have them fitted support the following formats: Canon iP6220D, CF, MMC, MSP SD, SM; Epson R240, CF, MMC, MSP SD, SM, xD; HP 8250, CF, MMC, MSP SD, SM, xD.

Consumables

It's been widely reported that printer ink is more expensive than champagne, and it's true, but with good reason. Bear in mind that HP, for example, spends around a billion dollars in R&D for each cartridge it launches, and that has to be clawed back somewhere.

There's a complex chemical reaction going on between photo inks and photo paper, when an inkjet photo print is created. For optimum accuracy, it pays to use the maker's own consumables, which are developed to work together as effectively as possible. However, while there's not much difference in paper prices between manufacturers, running costs for ink can vary considerably.

Traditionally 'single-ink' printers, with individual tanks are cheaper to run, because if you use a lot of one colour and it runs out, you end up throwing away two other inks. The flip side is that with each new tri-colour cartridge, you get a new print head. It's usually not cost effective and is sometimes impossible to change the fixed print head in many Canon and Epson single-ink printers.

In our tests, HP's new single-ink Photosmart 8250 had the cheapest running costs, with an average price of £1.04 per borderless A4 photo print. More surprisingly, Canon's new tri-colour cartridge-based iP6220D was the second cheapest at £1.10. Next up, the Epson R240 and Canon iP4200 cost £1.12 and £1.16 respectively and the single-ink Epson R220 turned out to be the most expensive at £1.30. However, you can reduce running costs for the R220 if you buy cartridges in triple-packs.





Print quality The best and worst go head to head

Canon PIXMA iP6220D



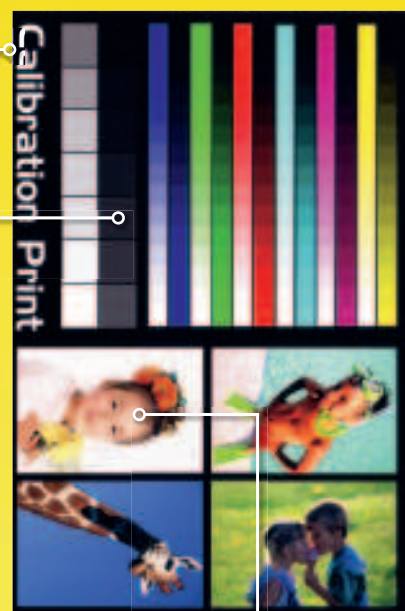
Colour bars

Colour graduations were surprisingly accurate on the Epson R240, considering its paltry four-ink line-up, but the Canon iP6220D is practically perfect.

Sharpness

With high resolutions and small droplet sizes, both printers are very sharp, especially noticeable in fine lines and around the test image's font edges.

Epson Stylus Photo R240



Greyscale

Greyscale bars were quite neutral on both prints, although colour temperature was a little cool in the Epson's rendition.

Natural colour

The greens and yellows of the field are well rendered by both printers but, again, the Canon has the edge over the Epson.

Blues

Subtly graduating blue skies are a real challenge for any photo printer. In this case, both models made a good job of the subject matter.

Flesh tones

The Canon gives a nice, subtle warmth to very light skin tones, like on the little girl, while they're a bit washed out on the four-ink Epson.

Software

When it comes to software, Canon printers are especially intuitive to use, while offering a genuinely useful range of accessories. For example, these include an excellent labelling creation tool on the iP4200 for direct printing to compatible CDs and DVDs, and a stylish photo album maker for the iP6220D. The printer driver itself has all sorts of adjustments and refinements for making the most of colour management and for applying special effects for black and white or sepia prints.

HP's *Image Zone* software for the 8250 is quite handy for fixing red-eye, lightening or darkening images and for applying colour correction, as well as for sharing your photos online. Epson's software tends to be a little more basic but you do at least get some good colour matching utilities. It's also worth bearing in mind that the photo printing wizard in Windows XP, available from the task pane in image folders, is particularly good for printing photos at a range of popular sizes.

Print durability

Prints from the Canon and Epson printers, at least using the manufacturers' own paper, are touch-dry as they exit the printer, although we would recommend leaving them for a few minutes before touching the surface. It also pays to leave them to dry for a few hours or overnight before mounting them behind glass or in an album. By comparison, HP prints feel a little tacky immediately after printing and seem to require a little more drying time.

Dye-based inks are commonly used in photo printing, because the dye molecules are much smaller than in pigment-based inks, so reflect light much more evenly. However, the smaller molecules are also more prone to damage from UV radiation and air pollutants, raising question marks over the longevity of inkjet photos compared with traditional silver halide prints.

The current generation of Epson and HP inks, when used with the companies' own paper supplies, can offer fade-resistance for over 200 years when stored in an album, away from direct light. Higher humidity levels shorten the print life and, if you mount prints behind glass (out of direct sunlight) they should last for about 100 years. You can extend this to around 175 years if you use glass that has a UV filter, while open to the air, life expectancy can drop to about 35 years. These figures are all based on accelerated tests carried out independently by the Wilhelm Institute. Visit www.wilhelm-research.com for details.

| PRINT SPEEDS | Canon iP4200 | Canon iP6220D | Epson R220 | Epson R240 | HP 8250 |
|------------------------|--------------|---------------|------------|------------|---------|
| Normal quality 10x15cm | 0:51s | 1:02s | 0:57s | 1:05s | 0:53s |
| Best quality 10x15cm | 1:26s | 1:57s | 1:51s | 2:12s | 1:38s |
| Best quality A4 size | 3:47s | 5:02s | 4:57s | 5:27s | 3:08s |



Canon PIXMA iP4200

Manufacturer Canon **Web** www.canon.co.uk

£63

Look no further than the iP4200 if you want a single printer that's as adept at general document printing as it is at outputting glossy images. The unique five-ink line-up includes both pigment-based and dye-based black inks, for fast and effective document printing. There's no media card reader or LCD screen

here, but you do get PictBridge support for like-minded cameras.

The provision of two paper input trays as standard makes for easy paper management, as you can fill the lower paper 'cartridge' with standard paper and keep the top feeder for photo paper of various sizes.

Number of inks/cartridges Five inks, five cartridges

Cartridge cost 1 x £10, 4 x £9

Photo sizes supported 10x15cm, 13x18cm, A4

Resolution/droplet size 9,600x2,400dpi/1pl

76% PCF says... "A great all-rounder with no need to swap cartridges around for different print jobs, but there's no built-in media card reader."

Epson Stylus Photo R220

Manufacturer Epson **Web** www.epson.co.uk

£59

When it was launched, the R220 was a real bargain. However, prices of other models have dropped significantly, making the R220 look almost dear, considering its lack of direct printing facilities; you don't even get a PictBridge port. Like the other six-ink photo printers in this group, mono text printing is

distinctly poor, but the R220's main strength is that it delivers superbly accurate colour rendition and very realistic skin tones. It's still the cheapest printer of the five, but running costs are fairly expensive, even despite the R220 having individually replaceable cartridges for all six inks.

Number of inks/cartridges Six inks, six cartridges

Cartridge cost 6 x £11

Photo sizes supported 9x13cm, 10x15cm, 13x18cm, 20x30cm, A4

Resolution/droplet size 5,760x1,440dpi/3pl

82% PCF says... "Basic to the point of austerity. Lacks a media card reader or even PictBridge support, but does boast very accurate colour rendition."



Epson Stylus Photo R240

Manufacturer Epson **Web** www.epson.co.uk

£73

Epson was the first manufacturer to bring a six-ink photo inkjet printer to the mass market and has been supplying high performance models ever since, offering impressively wide colour space. This makes the fact that the new R240 uses only four inks a real surprise. However, unlike most four-ink printers, it still

produces good skin tones, pastel shades and vivid colours, while avoiding banding in graduating colours. There's a host of standalone printing features, based around PictBridge, a multi-format card reader and 2.4-inch LCD but, especially in top quality mode, printing is a little on the slow side.

Number of inks/cartridges Four inks, four cartridges

Cartridge cost 4 x £7

Paper sizes supported 9x13cm, 10x15cm, 13x18cm, 20x30cm, A4

Resolution/droplet size 5,760 x 1,440dpi/2pl

71% PCF says... "A host of standalone print features but the R240 is ultimately let down by the meagre colour space of its four-ink system."

HP Photosmart 8250

Manufacturer HP **Web** www.canon.co.uk

£87

While the Canon iP6220D opts for tri-colour cartridges, HP has finally broken a life-long habit and brought a 'single-ink' printer to the market. The Photosmart 8250 has a fixed print head and six separate ink tanks, which are individually replaceable. The theory is that you can save money by only replacing

colours that have actually run out, but unlike the Epson R220, the HP 8250 really does translate this into the cheapest running costs in the group, as well as offering the fastest print speeds here. Photos tend to be slightly less glossy than Canon or Epson prints, but the colour reproduction is great.

Number of inks/cartridges Six inks, six cartridges

Cartridge cost 1 x £11, 5 x £7

Paper sizes supported 10x15cm, 13x18cm, 10x30cm, A4, 210x610cm

Resolution/droplet size 4,800x1,200dpi/2pl

85% PCF says... "It's the cheapest printer to run in the group, with a good range of standalone features and high photo print quality as well."





Canon PIXMA iP6220D

Manufacturer Canon Web www.canon.co.uk

£64

The new iP6200D takes a leaf out of HP's book by building the print heads into tri-colour cartridges, rather than having them mounted in the printer. The bonus is that you get a new print head with every cartridge and, while this can mean high running costs, the iP6220D is

pretty frugal. Full direct printing facilities include a multi-format card reader, 2.5-inch LCD screen and simple yet versatile control system. The full six-ink arsenal is great for full-ranging colour in photos but, mono document printing is slow and expensive with greyish text.

Number of inks/cartridges Six inks, two cartridges

Cartridge cost 1 x £15, 1 x £19

Paper sizes supported 10x15cm, 13x18cm, A4

Resolution/droplet size 4,800x1,200dpi/2pl

91% **PCF says...** "Stunning photo print quality, pretty swift and surprisingly cheap to run for a printer with cartridges that have built-in print heads."

"The Canon IP6220D is super-sharp, and really does breathe life into photo prints"

Prints charming

Our photo printer test's final developments...

Epson's decision to make its new R240 photo printer rely on four colours rather than six leaves us mystified. In fairness, it makes a good job of giving accurate rendition but it simply doesn't have the overall colour space offered by the six-ink photo printers in the group, and very light skin tones, in particular, looked a little washed out in our tests. The Canon iP4200 fared a little better, with its unique five-ink arsenal; but colour space limitations were still a slight issue, even if the printer is ideal for using as a regular document printer as well as just for photos.

Next up, the Epson R220 produces wonderfully accurate prints in terms of colour rendition and tonal range, making it a good choice for photographers who

demand that what they get on paper is exactly what they see on screen, provided their monitor is properly calibrated. The downside is that the R220 proved the most expensive to run in our tests. On balance, we preferred the HP 8250 which, although it produced less full-on glossy photos than the Epson, was still extremely accurate and cheaper to run.

The Canon iP6220D is our pick of the group. Strictly speaking, printed images sometimes erred on the side of being a little overly vivid but the printer really does breathe life into photo prints. It's super-sharp, with great colour rendition and has all the direct printing extras you could hope for. It's also a real steal at this price point, along with surprisingly low running costs. We love it. **PCF**

Pocket money pages

**SUB-£100
GOODIES
FOR THE
BARGAIN
HUNTER**



SkipDr Advanced Disk Repair System

Problems with your discs? Scratch them beyond all recognition

Price £22 Manufacturer Digital Innovations Web www.digitalinnovations.com

This is a question of respect. With the threat of the Skip Doctor looming large on your desk, you'll always be able to lord over your collection of mangled media. Not playing? Squirt on some of the cleaning solution, jam them in the top of the mincer, and start turning the wheel; the scratched-up surface ends up re-scratched in a readable manner. Don't think you'll be looking sophisticated while torturing your discs, though, because the grinding handle shoots several feet across the room with even the lightest touch, and the abrasive wheel has two settings, only one of which isn't 'spit disc towards Editor at high speed.'

Poor construction aside, this device is genuinely useful – we fixed DVDs which constantly jumped, saved a selection of ritually abused CDs, and mended a driver disc that had been run over with an office chair. If you're too lazy to look after your discs, we can see no reason not to have a Skip Doctor around.

gold
PCFormat

90% PCF says... "More skilled scratching than a DMC world championship."



Enermax Glory

Price £50 Manufacturer Enermax
Web www.enermax.com

There are bog-standard drive enclosures, and there are drive enclosures that you have to spend big money on. This is a bit on the pricier side (see the Revoltec model over yonder for proof), but comprises a number of fairly useful selling points. It's made of spiffy brushed aluminium for a start, meaning the huge case won't fracture your vertebrae when you try to carry it. The space in the case has been put to good use, with a sturdy drive-supporting frame mounted inside, and a degree of soundproofing to keep things quiet. There are even three instant backup buttons that you'll never ever use. How can you resist?

80% PCF says... "This is the zenith of HDD box design. Stop here."

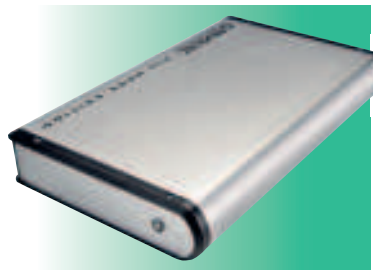


Arianet Wireless Headphones

Price £20 Manufacturer Arianet
Web www.arianet.co.uk

Do you like cheap OEM kit? Does an utter lack of branding and rough-edged silver plastic get your juices going? Prepare for a mild tingling sensation, then, because Arianet's £20 headphones tick all of your boxes. They're surprisingly comfortable for something knocked out on the cheap, with a padded head band complementing the big soft cans. The neck bending imbalance caused by the left ear mounted AAA batteries is something of an issue, though, and you really do need to spend a little more if sound quality is in any way important.

64% PCF says... "Considering the price, these cans aren't bad."



Revoltec Alu Book 3.5

Price £28 Manufacturer Revoltec
Web www.revoltec.com

This by-the-numbers USB hard drive enclosure is a lot smaller and lighter than Enermax's effort, but less gimmicky too. There's no soundproofing or faintly pointless backup buttons here – just a svelte aluminium sleeve with the requisite IDE to USB converting electronics, a commitment to simplicity that should be roundly applauded. Whether it will work directly from the USB bus power largely depends on the drive and machine you're running it on. Really the only thing that matters here is the price, and it's just a shade too high for something so basic.

75% PCF says... "A cheap way of revitalising an old IDE drive."



SlimPlug

Price £15 Manufacturer Ridings
Web www.slimplug.com

You know the feeling. You're just about ready to pack your laptop into its bag when you realise, to your abject horror, that your power plug is about an inch too thick to fit in there. There's no way you can travel now. Heavens to Betsy, it could leave an unsightly bulge! But wait, what's this? A collapsible power plug? All of your dreams have come true! Now you can save that extra inch of precious packing space, and enjoy the wonder of a quick pin-release action. It's pretty tidy, and also saves the inside of your laptop bag, and of course your laptop itself, from unsightly scratches caused by unfriendly plug-prong interference.

78% PCF says... "Cheap, cheerful and useful, too."



Creative Live! Cam Voice

Because exclamation! Marks in the! Middle of sentences! Are cool!

Price £80 Manufacturer Creative Web www.creative.com

At last, webcams are catching up. You can buy a camera without being faintly embarrassed by its shoddy output. People will be able to see you. We'll let you decide whether that's a good thing or not. The Live! Cam Voice boasts a sensor capable of 1.3MP in video mode and 5MP interpolated still pics. Whether you'll be broadcasting a 1,280x1,024 video to a chum is another matter, of course. There's also a two-point microphone with active noise cancellation, which produces very clear output. The directional function also blocks out all extraneous noise, too.

Software-wise, there's a selection of video effects that can be applied when using a second, lower resolution driver, but these are a far cry from the amusing facial adornments that Logitech cameras offer. In low-res mode, the picture is washed out and noisy, but your investment is more in sound than video here, and unless you have a pressing need to broadcast huge images you might be better off looking elsewhere.



Zalman Ultra Quiet CPU Cooler

Price £39 Manufacturer Zalman Web www.quietpc.co.uk

We've looked at Zalman's 'flower' coolers in PCFormat several times before, and rather admired the Intel version. This AMD incarnation, resplendent in understated black and chromed copper, hasn't changed our minds. Flooding your internals with a murky green light, the translucent fan thrusts air over three figure-of-eight heat pipes and a runnel of copper fins for some very impressive cooling with absolutely minimal noise. It's even a lot easier to install than the Intel version, but that's more down to motherboard design than anything Zalman has done.



Microsoft LifeCam VX-3000

Price £30 Manufacturer Microsoft Web www.microsoft.com

There's a worrying trend towards devices which are 'recommended' for services like MSN, as if a device which didn't have a particular logo on the box wouldn't work with any other service. This cam, sitting firmly in the middle ground with a 640x480 sensor and reasonable face-tracking drivers, is guilty. Sure, there's a button on top for speedy MSN calling, but we honestly can't see any reason to press it. Webcams don't need buttons, they need decent sensors: this one, despite being unable to pull off 1.3MP video (see above), is competent in almost all light conditions.



Noisemagic Novibes III

Price £25 Manufacturer Noisemagic Web www.chillblast.co.uk

Boing! Give your hard drive the ride of its life with this, a small metal frame with a couple of rubber bands on it. Slip in your inch-high drives, ping the rubber bands until everything is sitting neatly, and install as usual: you'll notice some reduction in the noise output. Usually these things end with us debunking such stupid ideas as mere piffle, right? Not so here. We used a WD Raptor and a well-heeled Cooler Master case for our test, and once installed, the Novibes dropped the, er, vibes significantly, reducing the usual platter-clatter to a delicate aural tickle. Slinky.

91% PCF says... "Cool, quiet, and cheap enough for anyone."

88% PCF says... "A sensor which does the job perfectly, at a

87% PCF says... "Rubber bands and PCs do mix, after all."

Long term test

RATINGS BEYOND THE WARRANTY

Nokia N70 Smartphone

Why on Earth I switched from a tiny Samsung slider to this hulking housebrick made of dark matter some nine months ago is beyond me. Perhaps it was the mammarian charms of the lady in the shop. Whatever the reason, I now need to wear a belt a lot more often, and I have a phone which takes over a minute to boot up. Pah! The first few months with My First Smartphone were actually quite inspiring, thanks to a huge array of homebrew gubbins available on t'internet. It runs Doom, of course, and I was also convinced to pay money for vNes, an excellent NES emulator. Unfortunately, my thumbs are obviously not of the delicate Finnish variety required to operate Nokia's idea of a phone keypad – nothing but the excellent Doom RPG has proven playable with two thumbs.

Once I'd lost interest in the Series 60 OS, the Nokia became little but an annoyance. The camera slider constantly opens itself, the menus are slow and unattractive, and you're forced into using the uncomfortable bundled headphones if you want to listen to music. So much potential; so much bungling uselessness.

Alex Cox



Tell us yours...

Send us a 200 word review of long treasured kit and if we print it, you'll receive a rugged, long lasting PNY Outdoor Attache 512MB USB memory stick. Mail your reviews to pcfmail@futurenet.co.uk.



TRANSFER TOY

WS_FTP Pro 2007

An FTP client that actually says 'uh-oh' when things go wrong

Price £40 Publisher Ipswitch Web www.ipswitch.com

Now, it goes without saying that if your first instinct when seeing a price on something as simple as an FTP program involves screaming, laughing, or the coughing up of your own spleen, *WS_FTP* isn't going to be for you. It uploads files. It downloads files. It CHMODs as 666, as time permits. The basic functions are available for free in about 100 different applications.

However, if you've ever tried a professional FTP program, you'll know that things aren't quite so simple. What initially seem like bolt-on features can quickly become essential timesavers – and *WS_FTP* offers plenty of them to pick and choose from.

One of the most useful, particularly if you're into the blogging scene, is the ability to view your entries as thumbnails instead of just files. It takes a while to process each folder, but makes images much easier to manage. Another handles backing up, automatically pulling set files and folders from your machine and shunting them up onto the internet on whatever schedule you need.

We'd suggest making sure you're comfortable with web security first, although Compression Mode does store everything in a password protected ZIP. You can also synchronise

folders between the web and your home machine, and create workspaces to keep your important connections close at hand. Finally, this version has plenty of extra error checking code to make sure that your files successfully make the jump from PC to the net.

THE MANAGEMENT

In short, *WS_FTP* is an extremely polished, useful file manager. The ability to do things like hook it into any major desktop search package, giving you instant drag and drop for any file on your PC, puts it far ahead of most of the free competition, and the many bonus features make it an excellent addition to your toolbox.

That said, to justify the outlay, you'll need to spend a fair amount of time working with files. For a simple blog, features like the thumbnail are useful, but arguably not essential – although the effectively free online backup and file synchronisation aspects of this application could perhaps tip the balance back if you're comfortable leaving files on your web server. **Richard Cobbett**

Needs Windows 2000/XP, 32MB RAM

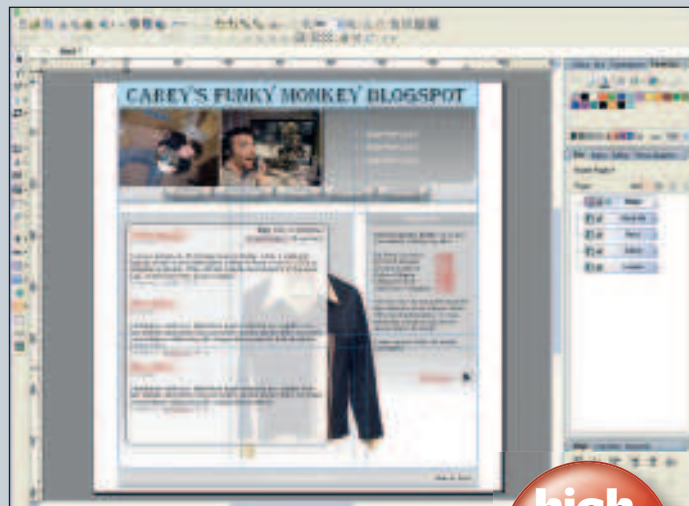
Wants 128MB RAM, broadband

90% PCF says... "Enough useful features to justify the financial outlay."



Backup jobs automatically shunt your files to the relative safety of the internet.

gold
PCFormat



Webplus made designing pages so easy, we could cry.

high
score
PCFormat

PAGE TURNER

Webplus 10

And now, how to design a website without even knowing what HTML stands for

Price £60 Publisher Serif Website www.serif.com

Following on from the well-received *Webplus 9*, the tenth instalment of Serif's DIY page-maker is about as puzzling and complicated to use as a glass of water. When you fire it up for the first time, the interface seems absolutely chocka with tools and options; however, a quick click of the Help tab, and the beginner is coddled to the point of nannying. If you're new to webpage building, *Webplus 10* is pretty much the least intimidating design package you can buy.

The package contains numerous walkthroughs for every stage of the process, and the program comes pre-loaded with a metric ton of templates for different kinds of websites; hobby pages, blogs, e-commerce sites, online photo galleries, and pretty much anything else your brain might cook up. So if you really can't be bothered to design something from scratch yourself, the framework is already there. Extensive support for e-commerce is another of the aces hidden up *Webplus 10*'s wizardly sleeves, and it's a piece of the proverbial to link in common shopping-cart providers and secure payment methods such as PayPal.

Editing existing pages is a cinch too, as you can easily import sites, complete with accompanying meta-data, server-side script, forms

and so forth. So if you've already built a site using, say, your ISP's free-but-naff page-building software, *Webplus 10* is a good environment in which to start it up properly, give your online presence a distinctly professional air with the absolute minimum of fuss.

HOME HELP

All of which makes the package ideal for homespun business users, bloggers and recently converted dabblers alike. It's no *Dreamweaver* – but if you're already coding in HTML and know your CSS onions, you're probably using that already, and for you, *Webplus 10* is going to be a step down from the versatility you're used to. However, for the amateur page-builder after a grounding in the art of site construction, such simplicity is a boon, and *Webplus 10* holds your hand whenever you ask it to. The price is also decidedly attractive; after all, £60 isn't much to ask for a tool that can help you create professional-looking pages. **Al Bickham**

Needs 1GHz CPU, 64MB RAM, 800x600 display, Internet Explorer

Wants 2GHz CPU, 512MB RAM, 1,024x768 display

86% PCF says... "Hassle-free page-building for beginners. Excellent."



The Maserati MC12 is taking all comers in the FIA GT series. It's a monstrously powerful machine, albeit one that corners like a boat.





"GTR2 is a thrilling, rich and challenging game that requires more thought than most racers"

IT'S A GAS

GTR2

Speed-obsessed pedants rejoice. The racing game that sorts the men from the boys is back...

Price £35 Publisher Atari Developer SimBin Web www.gtr-game.com

How hard can driving a racing car be? We hear it all the time and anyone watching the Formula One at the moment would be forgiven for thinking the drivers have something else on their minds. Worse, we're sure we've seen Schumi sneaking in a game of *Tetris* on that wheel-mounted LCD screen.

PC gamers, of course, had the illusion that anyone can be a racer obliterated when *GTR* rolled up. The game required perseverance, and many were turned off by the sheer amount going on in that physics engine.

But then why do we play games? Is it the journey or the destination? Sure, if you fired up *GTR* in the hope that you'd quickly complete it, you'll have been served your derriere on a platter, make no mistake. If you started with the driving aids switched on, however, and worked your way up to speed, the game could be enormously satisfying. But the big question is can we recommend a game that requires so much graft? It's a difficult one to quantify, but *GTR*

received a solid 82% in *PCF172*.

GTR2 makes things slightly easier by cleaning up just about everything that was rough about its predecessor. No longer is the racing driven by an engine that's as well worn as Casanova's scoring pants – instead the game's backbone is the maths that powered

ON THE DVD

>> Screenshot gallery



BUY THIS IF YOU LIKE...

- >> *GTR*
Atari
- >> *rFactor*
ISI
- >> *TOCA Race Driver 3*
Codemasters



Enna Pergusa takes the time honoured long-straight-leading-to-sharp-stop approach to track design.

PCF Driving School

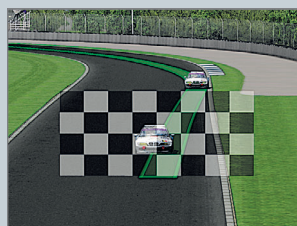
Brings new meaning to 'turn in the road'



1 This is one of the overtaking lessons in GTR2's new driving school. Unfortunately we've entered the corner at a slightly sharper angle than recommended on our devil-may-care lunge to the inside. Still, all is not lost.



2 Ease up on the accelerator and turn into the slide to catch the momentum of the car. Hold it there and, as the back end comes into line, feed the accelerator back in and straighten up. Easy when you know how.



3 Hurrah! You've escaped becoming separated from your extremities. Now escape to victory and collect your certificate. You've passed PCFormat's Hazzard County Driving School Test. Just please don't try this on the road.

art of taming the 500 horses beneath your buttocks. As you can tell from the PCF Driving School boxout on the left, there's more than one way to skin a catalytic converter, but for the most part the lessons teach you useful racing know-how and are rewarding in of themselves. Unlike *Gran Turismo*, and these tests aren't mandatory either, but will unlock new fictional championships which in turn unlock variations of the courses. The School will help you learn your way around some of the less familiar location on the calendar (Zuhai, anyone?), as there are dedicated lessons and challenges for each course.

LAP IT UP

Don't be fooled though, If you like your racing fast, tactical and dangerous, GTR2 can oblige. Whack the game into simulation mode and leadfoots will soon be skipping over the gravel, shedding bodywork as they go. The driving physics have also received some tinkering under the bonnet to further boost the realism. Most noticeably, oversteer is now no longer an instant death sentence – we managed to save a car whose rear wheels were attempting to overtake the front ones on several (albeit hairy) occasions. As you get used to the way each car reacts on different surfaces and at varying speeds, you really get a feel for your task, and will soon start predicting each vehicle's response, meaning mistakes are made because you are pushing too hard, not because of a deficiency in the physics. The sensation of speed and door-bashing AI

the beautiful *GT Legends*. This really is a visual feast, with ludicrously detailed car models that feature all the grilles and sponsor logos you'd find on their real-life counterparts. Even more impressive are the environmental effects, with the wet weather in particular a groundbreaking addition to the genre. Rather than just a smattering of static puddles, the track actually dries as you race around it, and you can see the reflections fade on the areas that have been cleaned up.

GRAPHIC TRAFFIC

The day and night cycle is fantastic too. Squeeze a 24-hour race into an hour, say, and you'll see the sun drop in the sky and the clouds turn pink at sunset. Hit 11pm and you'll be faced with the terrifying prospect of shooting through the woodland at Monza's royal park in inky black darkness. GTR2 suggests sixth gear. We suggest finding religion.

Luckily for the casual player, GTR2 makes a real effort to accommodate novices. In part this is thanks to a more clearly marked and navigable realism menu, which lets you choose from three preset modes, or manage the driving aids individually. Boot traction control and anti-lock brakes up to high and stick stability control on and you should be whipping around happily. If even that is too much of a struggle, steering and braking help mean the car almost drives itself. Whatever your ability, there should be a setup that works. Not that your skill level will remain static for long...

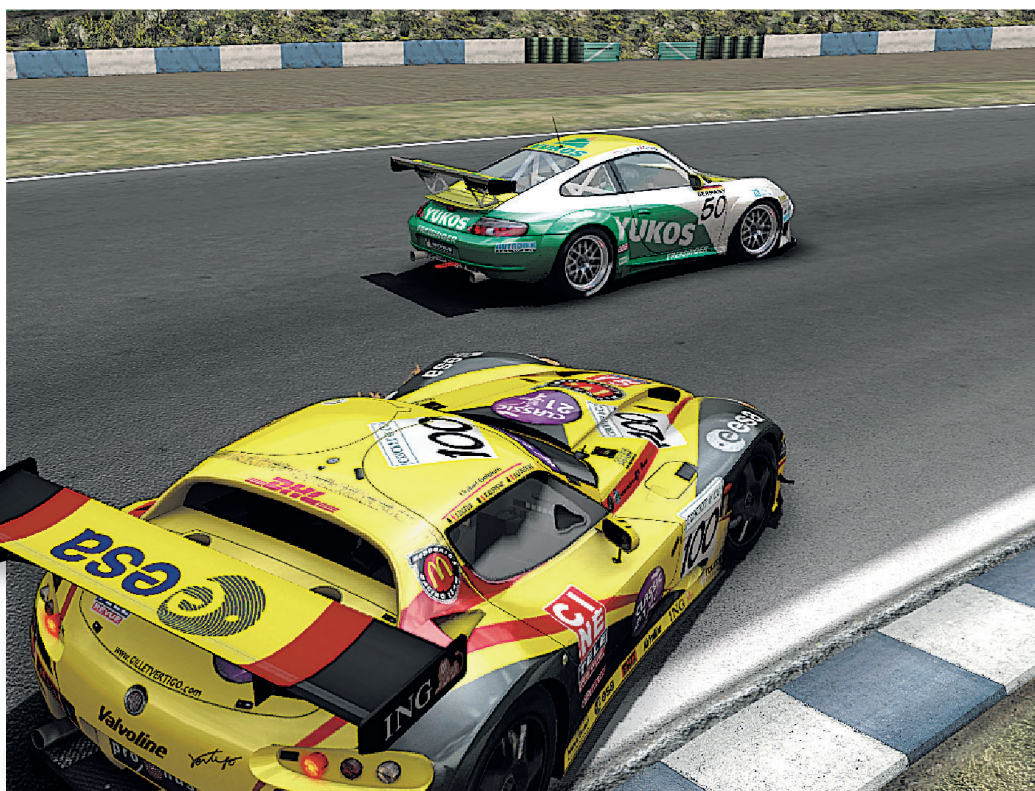
GTR2 also brings with it a comprehensive driving school, with 142 separate challenges, to teach you the

Just about the only Belgian sports car we've ever heard of, the Gillet Vertigo is one of the more garish entries in the game.

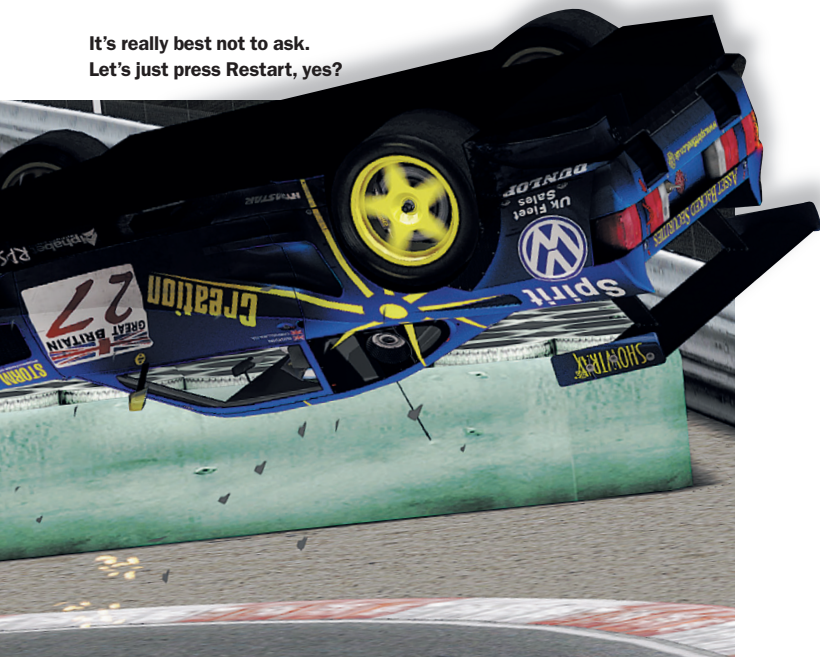
Disc whirled

We brake for... corners

If you doubted the detail that went into GTR2, just check out these glowing brake discs, which are directly representative of the actual disc temperature. Shift the brake bias to the front and the rear ones will be dimmer than a Darwin Award nominee, but still only visible in replays. We doff our cap to such attention to detail.



It's really best not to ask.
Let's just press Restart, yes?



are both exemplary, and carving through a pack of 30 cars as the gorgeous engine notes wail is a truly exhilarating racing experience.

So, GTR2 is a thrilling, rich and challenging game, but it requires more effort than the *Burnouts* of this world. Despite the addition of the lessons, newbies will still be intimidated, but with some work, and help from the driving aids, the majority of people should find the game rewarding. Debate raged at PCF over whether any driving sim should ever be awarded over 90%. GTR2 is certainly good enough. **Mike Channell**

Needs 1.3GHz CPU, 512MB RAM, 64MB graphics card

Wants 2GHz CPU, 1GB RAM, 256MB graphics card

Net gaming LAN/internet 28 players

Discuss pcformat.co.uk/mag/gtr2

91% **PCF says...** "A sensory feast, GTR2 takes you so close you can almost smell the burning rubber. The best PC racing sim there is."

"Even if you're a novice, there will be a setting here that works"

Below: Clanging doorhandles together is *de rigueur* in GTR2's pitched battles.



RAISE AN ARMY.
RULE THE WORLD.



ARCHLORD™
WWW.ARCHLORDGAME.COM



Steven Gerrard can singlehandedly drag your Liverpool side to FA Cup glory, too.



The graphics are much improved, and Emile Heskey falls down in a realistic manner.



Yes! Foolhardy £18m swoops for the 48th 'new Roy Keane' can be yours!

DIFFERENT BALL GAME

LMA Manager 2007

As the old rivals go head to head, our money's on the photogenic whippersnapper to cause an upset here

Price £30 Publisher Codemasters Developer In-house Web www.codemasters.com

The new season having just kicked off in earnest, it seems only right and proper that the PC's principal football management games should both be updated. But while *Football Manager* devotee Dave James waits for this season's update to arrive, *LMA*'s latest incarnation is already here, and like the upstart younger cousin of *FM2006* that it is, it's already tugging at *PCFormat*'s elbow and asking when it can go for a kickabout.

So, as Tom Jones might have it, "what's new, statistics-based football

ON THE DVD

>> Screenshot gallery

BUY THIS IF YOU LIKE...

- >> **Pro Evolution Soccer 5**
Konami
- >> **Football Manager**
Sports Interactive
- >> **FIFA Manager 06**
EA

franchise?" The answer, sadly, is "not much." Initially, new features appear rarer than a Phil Neville hat-trick.

NEW SIGNINGS

That said, the game looks better than its predecessor, whose menus, while certainly flashier than those found in the austere *Football Manager* interface, were still a bore. This time round, text panels the colour of HMS Belfast have been replaced by modern blues and greens, and you can now right-click on any

better than ever. The player animations are far smoother, and there are more of them. The commentary is unobtrusive and, worryingly, makes more sense than its real-life equivalent, the replay mode is more comprehensive than before, and it's a genuine pleasure to watch matches. Especially with your all-new manager avatar bellowing instructions from the touchline.

So, we enjoyed *LMA 2007*, and it's a worthy successor to last year's edition, but we couldn't help noticing that there's a fundamental lack of new features. The match engine is a big improvement, but fans might insist on more genuine additions before deciding to blow their transfer warchest on this.

Alex Jones

New faces

Design your own Wenger-baiting avatar



Previous editions of *LMA* enabled you to alter tactics by shouting frenziedly from the touchline in the style of Martin O'Neill, but now you can see your 'manager' doing it. We couldn't help noticing that we ended up with a bloke who resembles a noted Sicilian crime boss, though.

player's name to interact with them, or find out pretty much anything you like.

But enough of all that – if you're an *LMA* fan rather than one loyal to *Football Manager*, one thing and one thing alone will really matter – the match engine. Previous editions have (rightly) trumpeted this feature as the *LMA* franchise's unique selling point, and it's

Needs 1GHz CPU, 512MB RAM, 256MB 3D card

Wants 2GHz CPU, 1GB RAM, 256MB 3D card

Net gaming None

Discuss www.pcformat.co.uk/mag/lma2007

73% **PCF says...** "Aesthetically, it's a great leap forward, but it lacks *Football Manager*'s depth."



DODGY DAGGERS

Sword of the Stars

Vot would Freud say, ja?

Price £30 Publisher Lighthouse Interactive Web www.swordofthestars.com

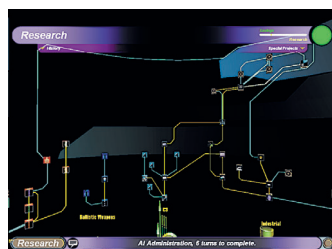
This review should be as simple as 'Master of Orion's space strategy bits, mixed with Homeworld's RTS bits' – a main galactic map, complete with all the usual bits and pieces, swooping down into directly controlled, full 3D battles whenever danger rears its ugly head.

And as a capsule synopsis, that's fine. That's more or less what we've got here. And yet, not quite. It's more complicated than that. Ignoring the fancy 3D technology, the overall feel is much like a board game – unlike *Galactic Civilisations 2*, which put all its focus on the singleplayer, SOTS is best against other players, where elements like the difference between interstellar travel tech can come into their own.

STAR STYLE

SOTS sits in an uneasy middle ground between the Big Picture – you don't have to care if Planet X has enough farms, for instance, it's just a resource bar – as is Really Small Micromanagement, such as making sure that your

Aliens courtesy of Miss Milton's Year Nine art class.



This, apparently, is the research screen. Not confusing at all, then.

armadas are kept fuelled on their way to the destination. Learning the game is damn hard, not least because the UI is simply atrocious. From the spinny-sprawly molecule from Hell masquerading as the Galaxy Map, to the irritating 3D research screen, simply getting around is a pain – one that deepens with SOTS' insistence on primarily giving you status updates via awful voice acting, or the appearance of childish 2D artwork among all the sleek 3D ships. Brrr.

SOTS isn't bad, but it does make you feel like the last 10 years never happened. It's cramped and fiddly when it should be opening up the universe, and lonely and isolated even with a whole army to order about. Worth a look if you plan to play it with friends, but requires real effort to play it enough to be ready for proper solo play. **Richard Cobbett**

Needs 1.5GHz CPU, 1GB RAM, 128MB 3D card

Wants 2GHz CPU, 1.5GB RAM, 256MB 3D card

Net gaming LAN/Internet (8 players)

68%

PCF says... "Solid, but hampered mostly by a terrible lack of depth."

RAISE AN ARMY.
RULE THE WORLD.



ARCHLORD™
WWW.ARCHLORDGAME.COM





The game remains so hectic that working out what you're clicking on can be tricky.



If you go down to the woods today, you're sure of a unique dryad longsword.



The party decided that this tricky problem was best solved by using brutal violence.

STAB IN THE DARK

Dungeon Siege II Broken World

Sweep it up, quickly! Mum's coming. She'll be furious

Price £15 Publisher 2K Games Developer Gas Powered Games Web www.dungeonsiege.com

David Gemmel died recently, at a scant 57 years old. He was one of the world's most prolific pulp fantasy authors, churning out reams of prose. In many ways, he was somewhat different to the majority of modern fantasists.

While most authors write series following the same character's quests – trilogies being the bare minimum – Gemmel leant towards tying everything up in one book. He returned to the world and characters, sure, but the story was

ON THE DVD

>> Screenshot gallery

BUY THIS IF YOU LIKE...

>> Titan Quest

THQ

>> Diablo II

Blizzard

>> Dungeon Siege II

Microsoft

concluded by the time the last line was reached. He wasn't a 'to be continued' sort of guy. So we suspect he wouldn't have had much time for this expansion pack to Gas Powered Games's epic-action RPG, which is exactly that.

"Because YOU demanded it, you can finally play a dwarf"

THE SAGA CONTINUES

It's a fourth act continuing from the main game, chasing down the architect of all that's wrong. Scenery is similar. Many monsters are too, though often with some specific vulnerabilities to make the expert pay attention. Failing to realise that the tiny desert-frog creatures heal when attacked with fire is somewhat embarrassing. The biggest changes are the two new classes – a Blood Assassin, who merges ranged and combat magic, and the Fists of Stone, which merges Mêlée and Nature magic, as well as having a selection of spells

for yourself. The Assassin's ability to mark opponents and blow them up arguably leans them more towards multiplayer rather than the pile-on-mob of the singleplayer, but the Fists of Stone are phenomenally useful, like a Paladin who can create earthquakes. Oh, and because YOU demanded it, you can finally play a dwarf.

The pleasure of *Dungeon Siege II: Broken World*, essentially, is that of a standard fantasy author. Just turning the pages and seeing the old pleasures rolled out for the joys of the fans. If you're not a fan, there's nothing here to make you play long enough to change your mind. If your mind is set, however, your broadsword awaits. **Kieron Gillen**

Needs 1.8 GHz CPU, 512MB RAM, 1.4GB HD space, 128MB 3D card, *Dungeon Siege II*

Wants 3GHz CPU, 1GB RAM, 256MB 3D card, *Dungeon Siege II*

Net gaming 1-4

Discuss pcformat.co.uk/mag/brokenworld

65% PCF says... "This is an expansion pack for *Dungeon Siege II*, and little else."

Trinket time

Multiclass characters at last...



The Blood Assassin and Fist of Stone classes are more interesting than their predecessors, and an almighty fudge job. They're multi-class, so you must practise two skills – fun, because you don't use the same attack again and again; fudge, as you use a magic trinket to share XP between the skills.

WHEEL-LIFE RACING

Cars

Thankfully more imagination went into the game than the title

Price £20 Publisher THQ Web www.carsvideogame.co.uk



Powerslide handles like one of Mario's karts. Hang on in the back, won't you?

No matter how familiar you might be with the recent Pixar movie, it's still quite a shock the first time you bump your car into a wall and hear it cry out: "Owl!" Sorry little guy!

While Pixar's latest might not be its greatest, this videogame incarnation is surprisingly its best. Rather than attempting to recreate scenes from the film (as the game's press release rather confusingly claims it does), it's more of a sequel. Gathering the cast back together to record new material, Owen Wilson, Larry the Cable Guy, Paul Newman et al seem to put in real effort to have this be something of worth, rather than the usual post-release cash-in. It's no masterpiece, but it's surely one of the more absorbing kids' games around.

Set in the town of Radiator Springs, you predominantly control recent NASCAR hero Lightning McQueen – enthusiastically brought to life by Wilson's daft chatter – as he trundles around the story mode's GTA-for-kids valley. There are 250 missions,

and while a number of these are increasingly difficult challenges repeated as many as 20 times, they're varied and entertaining. You might be asked to collect scattered items, race against a friendly local, or even go tractor-tipping at night.

NO RIGHT TURN

A fair amount of the game is spent racing, what with controlling cheerfully anthropomorphised automobiles, mixing up the dirt tracks of Radiator Springs' desert dustbowls and the endless left turn of NASCAR asphalt.

The cars handle... uniquely, but very pleasantly. They're easy to control, and best of all, able to crouch and jump. It's aimed perfectly at its target audience, making winning a race achievable but by no means inevitable.

There's an Arcade mode and a two-player versus option, along with unlockable extras, and with so many missions in the Story mode, this is finally a kids' movie tie-in that's not simply trying to rob your naggd wallet. It's not stunning, but is a worthwhile bonus for any little fans of the film. **John Walker**

Needs 1.2GHz CPU, 256MB RAM, 32MB 3D card

Wants 2GHz CPU, 512MB RAM, 128MB 3D card

Net gaming None, but split-screen two-player

77% PCF says... "Bouncy fun rather than cynical cash-grabbing opportunism."



The graphics are of mixed quality.

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Yep, this is possibly the greatest moment in all of gaming history.



OMG! OMFG! And at the click of a button you're driving it for yourself! STOMP! STOMP!

PLASTIC PLATFORMING

LEGO Star Wars II The Original Trilogy

Traveller's Tales is back with its glorious (and gloriously silly) LEGO-based platforming. We doff our red plastic cap

Price £30 Publisher Activision Developer Traveller's Tales Web www.lucasarts.com/games/LEGOstarwarsii



Of course, if this was real LEGO, Mos Eisley's cantina would be all multicoloured.

Last year saw a surprise hit in the shape of *LEGO Star Wars*. Not only was it the first time we'd been able to feel any affection for the abysmal recent trilogy of *Star Wars* films, it was utterly joyful. The irreverent tone – pricking the pomposity of Lucas' universe – combined with some intricate, interesting platform puzzling, made for one of our all-time favourite family games. But if *only* it had been about the original trilogy.

So now all is right in the world! Because not only has Traveller's Tales

ON THE DVD

>> Screenshot gallery

BUY THIS IF YOU LIKE...

- >> *Mario Sunshine*
Nintendo
- >> *LEGO Star Wars*
Eidos
- >> *Ratchet & Clank*
Sony

given our favourite childhood sci-fi movies the same LEGO reinvention, but the dev has also given the game an oil bath, cleaning it up in many areas. The original was a dry run. This time we're blowing up Death Stars.

The concept is delicious: recreate the incredibly familiar, but using only the tools available in a box of LEGO. If you see Darth Vader using a communication device, it will be that clip-on walkie-talkie you remember from your own box. If you ride around in an AT-ST, it has to be an AT-ST constructed out of constituent LEGO parts, probably by using the Force.



BRICK IT

Using a cantina as a central hub, levels are unlocked by playing through the Story mode chapters in order, and can then be replayed in the world-opening Free mode. All three Episodes are quickly available, and each can be played through at your whim.

Each scene features at least two characters, with the computer taking on those that are not under your direct control. Should you have a buddy nearby

he or she can step in and take over one other, letting you work in tandem. The original's dodgy camera is thankfully much improved, keeping both players on screen at all times. The frustrating need to shepherd a fellow Force-wielder into position for two-character manoeuvres is eliminated, with the AI now running quickly and eagerly into place.

Story mode has you playing the characters relevant to the portrayed scenes, meaning you must pass by tantalising bonus items just out of reach. Free mode lets you reinvent cinematic history by taking any of the unlocked characters through the set pieces, and thus access specific areas or previously unretrieved items. The replayability of such a feature cannot be overstressed, inducing kleptomaniacism in even the most hardened player. Must... have... golden... block!

What makes *LSWII* such a stand-out game is that the LEGO is not simply a gimmick. It's intrinsic to the game dynamic, causing you to quickly think *in LEGO*. All characters (apart from droids) can now build items from LEGO pieces (in an automated fashion), meaning a

Blow Sith up

OK, it's not Sith, but it is a good pun...



One of the more simple delights is blowing things up. If it glows, it can be affected by the Force. If it wobbles, it can be constructed. And if it just sits there, it may explode into bonus tokens. Bonuses unlock characters and extras; spend the tokens on even more bonus features in the Cantina.



"This is metric tons of fun melted down in giant fun-factory vats, and then moulded into bobbled bricks"



Flying the Millennium Falcon is a positively religious experience for the staff of PCFormat. Grown men wept.

puzzle is often solved by blowing something up into its LEGO parts, and then rebuilding it into something new.

BLOCK PARTY

For instance, one wonderful sequence in *Episode IV* sees you rearranging the scenery so R2-D2 and C-3PO can open areas containing piles of LEGO blocks. Step in the mysterious Ben Kenobi who smashes up a few bits and pieces, deflects some blasts with his lightsabre, and then using the Force starts shuffling the bricks on top of one-another. And slowly it forms and reveals itself – yes, it's the AT-ST! Hop in, BLOW EVERYTHING UP, collect 80 squillion bonus tokens, then head off to meet Mr Harrison Ford and his hirsuite accomplice.

Episode V features excellent ship-based combat. Zipping around the snowy lands of Hoth, the ships flip over and around exactly as they should, and in a moment of squeal-out-loud happiness, let us bring down AT-ATs by firing the grappling hook at their legs and then flying the rope around and around. We're the happiest geeks in all the land.

Problems? Not many. The lightsabre is a little odd, missing too often for no

If the hat fits

A heads-up on how to solve problems



It's important to keep everyone else's head when you're losing yours. Machines on walls will dispense headwear, which will allow your characters access to certain areas. A door to a bonus area may open only to Stormtroopers, so get your guys suited up and they can pass through.

reason. The graphics are clearly set for a PS2, and fails to embrace the power of the PC; occasionally it looks a tad clunky. But most everything else is an improvement on before.

The original's initial Story Mode was perhaps too short. This time things last a good while longer, with more varied play, driveable vehicles, and the same mirthful cutscenes cutely mocking the movies betwixt levels.



And then it expands with the Free mode. Mixing LEGO parts, you can create your own unique, ridiculous characters to play with, and even select unlocked ships for alternate space combat. Shooting down X-Wings with an X-Wing is very wrong. But the key point is, it's also fun.

This is metric tons of fun melted down in giant fun-factory vats, and then moulded into bobbled bricks. It's incessantly entertaining, cute and hilarious, and hugely imaginative. This is a game that never punishes a younger player with limited lives or ridiculous difficulty. Instead it gets more intricate and *interesting*. It's not a platforming masterpiece, neither is it the ultimate puzzle game. It's simply an extremely good time.

John Walker

Needs 1GHz CPU, 256MB RAM, 32MB 3D card

Wants 2.4MHz CPU, 512MB RAM, 64MB 3D card

Net gaming Two player co-op

Discuss pcformat.co.uk/mag/lsw2

88%

PCF says... "Gloriously fun and deeply silly, it's the happiest platform game of all."



THE LORD'S PRAIRIE

Call of Juarez

It may be chock-full of Western clichés and steenking peeg-dogs, but is it the game Leone fans have been crying out for?

Price £35 Publisher Ascaron Developer Techland Web www.callofjuarez.com



Westerns have generally had a hard time translating into viable PC games. It's strange really, considering that the genre has all the elements one could wish for in a game. You have a wealth of background material to draw from, plenty of action, Injuns, damsels in distress and, in one notably bonkers recent example, some supernatural elements too.

The closest we've come to decent rootin', tootin' gunslingin' in recent years was the decidedly average *Gun* (PCF183, 71%). The question is, has

ON THE DVD

>> Screenshot gallery



BUY THIS IF YOU LIKE...

- >> **Gun**
Activision
- >> **Thief**
Eidos
- >> **Outlaw Josey Wales**
Malpaso

Techland made an *Outlaw Josey Wales*, or a *Brokeback Mountain* with its latest Peckinpah-esque effort?

EH, GRINGO...

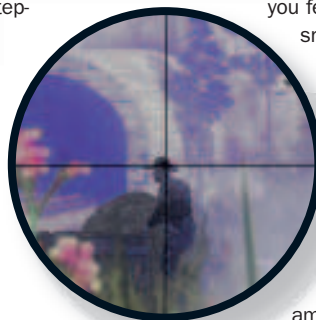
You start off the game as Billy Candle, a young man who, returning home after failed years seeking his fortune, finds his mother and stepfather dead. Fearing, rightly, that he'd be in the frame for their murder, he scarpers. You have to guide him out of town, sneaking past a lynch mob in the process. So far, so derivative, and frankly, as much fun as being forced to watch Bonanza repeats on the Edison Kinetoscope. The linear early levels makes them restrictive and unwelcome. You only have one route out of town and finding it's all trial and error. You find yourself needlessly blocked at every other turn by steep cliffs and insurmountable fences.

Then things take a turn for the schizophrenic and you enter the shoes

of the brother of Billy's stepfather, Reverend Ray, a former gunslinger turned preacher. His brother's death tempts him out of retirement, and he picks up his irons in the righteous pursuit of Billy. Things get quite literally biblical, as Ray opens fire with brimstone, ruthlessly persuing his man. With the guns in hand you feel more at home, and the sneak-'em-up elements

become a distant memory as you dish out retribution to anyone standing in your way. Because Ray's a seasoned old gunfighter at heart, he possesses skills that you don't have access to when playing as the comparatively amateurish Billy.

The most notable of these is the quick-draw mode, which puts the game in slow motion as you draw your pistols from their holsters. It gives you control of both guns via the left and right mouse buttons and two separate, gradually converging crosshairs. When the crosshairs meet, normal service is resumed. The system is devilishly simple, and works brilliantly, allowing you



Posse galore

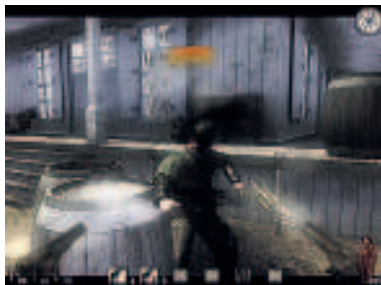
This town is big enough for several of us



The multiplayer portion of the game features classic level recreations like the *High Noon* and *OK Corral* maps, and as well as the usual deathmatch modes you can embark on daring bank and train robberies too. Techland is also shipping the game with all the tools you need to create your own maps.



No matter how mean a varmint you are, you can't go around killing the innocent.



This slow-motion carnival of death would probably make John Woo weep with joy.



Quickdraw duels are the only disappointing part of the otherwise top-hole slaughter.

to lay waste to hordes of no-good varmints quicker than they can think about drawing their weapons.

The only problem with all this is the realisation that, before long, you're going to end up back in Billy's worn cowboy boots, completing yet another round of tedious stealth. Sure enough, the episodes switch back and forth between the slo-mo firefights and the less satisfying sneaky Billy bits. Young William has skills of his own, though, like being able to climb and use his whip to grab branches for some Indiana Jones-style swinging.

REDEMPTION SONG

This kill-then-sneak format quickly becomes tedious, but grizzled gunslingers who tough it out will be rewarded. Each level gets larger and less proscribed, and the story becomes more interesting.

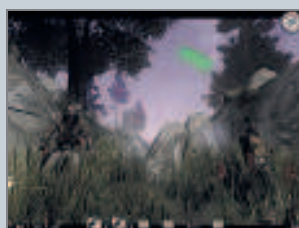
The gradual improvement of the gameplay pleased us no end. It's a beautiful game in practically all other respects. The music is very *Deadwood*, and fits the moody ambience of the story and gameplay perfectly. Visually it's quite stunning, drawing many comparisons with a more refined *Oblivion* from passers-by in the office. The most spectacular feature of the



Mowing down miscreants with a chaingun: the only way to be sure.

Slowly does it

Pinpoint precision with perfect timing



1

When your sidearms (not a rifle or shotgun) are safely holstered, you can go into 'concentration mode' which drops everything into a *Matrix*-style slow-motion.



2

Two crosshairs appear, which move towards the centre of the screen. You can fire each pistol independently and pivot your body to aim, airating the foolhardy as you go.



3

When the crosshairs join, time returns to normal and the bloody mess you've created can now settle to the ground. Now wait a few moments, and do it all again.

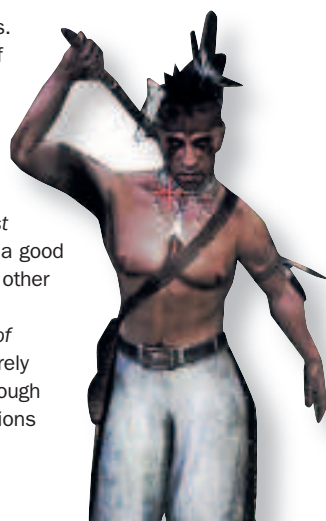
pretties is the depth of field effect Techland has managed to create.

When you focus on an object – for example, zooming in to take aim at something in the distance – depending on how far away the object in the crosshair is, the foreground or background become blurred, while the object you're looking is drawn into sharp focus. This effect is known as 'depth of field', and is something the human eye does automatically.

It's a fantastic effect and not just cosmetic. For example, Billy can hide away in the local flora, while looking past the branches in your face to get a good view of what's happening on the other side of your chosen cover.

After a stuttering start, *Call of Juarez* gets into its stride and rarely lets up. Following Billy's path through the levels, revisiting certain sections

"Lay waste to varmints quicker than they can draw their guns"



as trigger-happy Ray, lets you exact vengeance on all the people that you weren't able to dispatch the first time around. In the end, the character-switching brings a welcome change of pace throughout the game, especially during the very zen mountain climbing/eagle feather episode in the middle.

Techland has managed it, then: *Call of Juarez*, a few minor problems aside, feels very much like the bold, cinematic, interactive movie that it should be. The game ultimately remains true to its roots in the Western genre, and forces you to keep playing through to the bitter end of the adventure.

Dave James

Needs 2.2GHz CPU, 512MB RAM, 128MB 3D card

Wants 3GHz CPU, 1GB RAM, 512MB 3D card

Net gaming Up to 16 players LAN/internet

Discuss pcformat.co.uk/mag/juarez

81

PCF says... "The best Western game by far, with some outstanding visuals."

DARK AND SCARY

Penumbra

Horror for those with a short attention span

Price Free! **Publisher** Frictional Games **Web** www.frictionalgames.com

When it comes to advertising, gamers are equally blessed and cursed. Waging an eternal war against pop-ups, we rarely stop to smell the roses of advertising greatness – roses like *Penumbra*, for example, often pass us by.

While it's not strictly a game, *Penumbra* is a free tech demo with a story loosely slapped on to keep

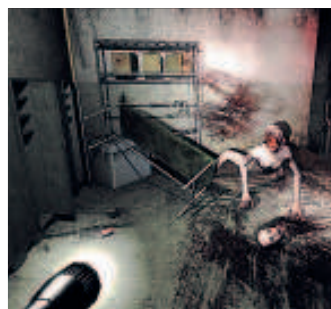
things interesting. Made by a small group of students to showcase an impressive physics system and graphics engine, *Penumbra* shoves the usual set of clichés at you – such as torches that only last so long – but balances them out with stunning ambience and graphics, as well as other flourishes. Though the game is only 20 minutes long at best, it's still a pretty absorbing gothic adventure in the *Doom 3* mould. Worth a look if you like your games claustrophobic and badly lit, then.

Needs 1GHz CPU, 256MB RAM, 128MB 3D card

Wants 2GHz CPU, 1GB RAM, 256MB 3D card

Net gaming None

82% **PCF says...** "Short-lived, plot-averse, but seat-soiling nonetheless."



Fans of *F.E.A.R.* will be pleased to hear that there's plenty of gore.

PIPE DREAM

And Round Again

Plumbing can be fun!

Price \$15 **Publisher** Michi.nu **Web** www.michi.nu

Despite the odd title, this is a well-crafted, decidedly odd little game that puts the player in the unenviable position of connecting random pieces together to make loops.

What you end up with is a weird cross between *Tetris* and Mario's day job. Completed loops will disappear and score points – with the aim being to continue as long as possible. There are plenty

of complications as the levels get steadily more taxing, but the vast bulk of the game's appeal lies in its sheer simplicity.

Though *And Round Again* can become repetitive after a while, and the lack of a save feature is a severely limiting oversight, it shouldn't dissuade those after a little bit of lunch-hour loop-making. It makes a refreshing change from bog-standard corridor-and-crate

shooters or long-winded strategy epics, and if you like games that tax the grey matter, give it a go.

Needs 1GHz CPU, 256MB RAM, 32MB 3D card

Wants 2GHz CPU, 512MB RAM, 64MB 3D card

Net gaming None

78% **PCF says...** "A perfect distraction for when the boss isn't looking."



Fiendish pipe-connecting action.

Also out

By Joe Martin
GAMING ROUND-UP



Pilot Light

Price Free! **Publisher** Brendon Chung
Web www.planethalflife.com/blended

The adventure game genre may be dead until the long-awaited return of Sam and Max, but it still kicks fitfully in its coffin from time to time. *Pilot Light* is a simple adventure game in the same vein as the classics, but with a *Futurama*-style spin. Commissioned on a simple case of package delivery, the player must guide the heroine through a buffet of coffee break-sized puzzles. Not exactly a breakthrough for indie games anywhere, but it's still a nice reminder of how games used to be.

Needs 500MHz CPU, 64 MB RAM

Wants 1GHz CPU, 256 RAM

Net gaming None

68% **PCF says...** "Quiet enjoyable, but longevity is sorely lacking."



Rumble Box

Price Free!
Publisher Patrick Hackett & Joe Bourrie
Web www.phackett.com/rumblebox

Winning multiple awards for innovation, *Rumble Box* is a vibrant, unapologetically artistic beat 'em-up where the aim is to pile up enough corpses to escape the arena. Sounds like our kind of thing, that. Colourful characters and combos mean that the action is relentless, and there are fistfuls of fun to be had throwing enemies around as you build a death mountain to victory. The bonus levels, are even more demented, which is a good thing in *PCF's* book.

Needs 1GHz CPU, DX9 3D card

Wants 1.5GHz CPU, DX9 3D card

Net gaming None

70% **PCF says...** "Thumbs-up for thinking outside the box."



Black Shades

Price Free! **Publisher** Wolfire Studios
Web www.wolfire.com

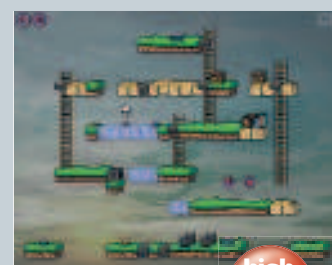
Yet more proof that games don't always need cutting-edge graphics to succeed, *Black Shades* is the flipside of games like *Hitman*, casting the player as a bodyguard who must defend his calamity prone VIP. The odd 'retro' look, combined with the fact that levels are played against the clock, certainly mark this out from the herd. Though it's without in-game saves or continues, the simple, uncluttered style will keep you coming back for more assailant-foiling fun time and time again.

Needs 500MHz CPU, 256MB RAM

Wants 1GHz CPU, 512MB RAM

Net gaming None

67% **PCF says...** "Insanely difficult, but fun nevertheless."



Professor Fizzwizzle

Price £12 **Publisher** Grubby Games
Web www.grubbygames.com

This is an example of gaming that bridges age gaps in its efforts to infuriate, confound and stump players. What starts as a simple platforming exercise quickly escalates into complex puzzles involving magnets and crazy-haired scientists. With a range of difficulties, from journalist stumping terrors to a mode for kids that teaches them the alphabet through puzzles, *Fizzwizzle* promises lots of fun and hair-pulling moments for all the family.

Needs 200MHz CPU, 64MB RAM

Wants 500MHz CPU, 256MB RAM

Net gaming None

88% **PCF says...** "Hard as nails and cute as kittens."



The Hard Way

What should you look for when buying a new hard drive? Dave James explores the options



Supposing your graphics accelerator is the thoroughbred race horse of your PC, then the hard drive is the shirehorse, minus the fluffy fetlocks. Your HD is not as cool, it's not as fashionable, but works just as hard under the hood of your rig, and without it you wouldn't even be able to play *Minesweeper*.

The modern hard drive may seem a less than exciting component, just sitting there remembering stuff, but it's a feat of engineering right up there with the microprocessor that sits happily alongside it within the confines of your PC. The minute size and speed of the mechanical technology operating within these drives is illustrated beautifully by the Western Digital Raptor X's clear cover. When we first got that particular little bundle of joy into the office it quickly drew a crowd, who watched in awe as the tiny read/write head skipped across the platter in a high-speed ballet of storage. The device moves so quickly across the surface that it looks as if it inhabits two different spaces at the same time. In days of yore they would

Just testing What we used

The mass of hard drives that we used for this test came from a number of different manufacturers, just to keep things fair.

Interface & RAID: Seagate drives
(www.seagate.com)

Capacity: Maxtor drives
(www.pcnextday.co.uk)

RPM: Western Digital drives
(www.pcnextday.co.uk)

Cache: Western Digital drives
(www.ebuyer.co.uk)

Thanks also to Hitachi GST for the anatomy of a hard drive.



have stuck a false nose on the hard drive and burned it at the stake.

It's difficult to believe then that this year the humble magnetic disk celebrates its 50th birthday. Way back in 1956, the first commercially available hard disk, the IBM 350 RAMAC, was released. It had a 5MB capacity – huge at that time – stored on 50 24-inch disks, and it was about the size of an IKEA bathroom suite. It wasn't until the early 70s that the hardware principles that still persist to this day were implemented in IBM's landmark drive, the Winchester.

As with most technology, the drive manufacturers have consolidated over time, leading to fewer companies producing drives as they become swallowed up by the big boys. Maxtor is the latest to fall, being bought up by Seagate this year, although its DiamondMax

connector transmits data both to and from the HD controller along the same multi-directional channels. Unfortunately this leads to interference in the data transfer, corrupting the information flow.

With SATA the data is transmitted via two separate channels, reducing the chances of this crosstalk interference. The cabling is also much thinner – seven pins wide as opposed to the 20-pin width of the old IDE cables. It's possible to cram more drives into your rig, and the smaller cables make this less of a logistical nightmare than with PATA.

It's not just about the connection, however, as the SATA interface offers quite a considerable boost to the speeds that the device can manage. Burst speed is the fastest that information can be transferred from a drive's internal

“The manufacturers have consolidated, leading to fewer companies producing drives”

drives are still available to buy for the time being. There are, however, five companies remaining at the bleeding edge of hard drive technology: Western Digital, Seagate/Maxtor, Samsung, Toshiba (which focuses on notebook storage) and Hitachi, the remains of IBM's hard drive division.

With each manufacturer producing new drives every few months, sporting ever more complex specifications and acronyms, it can be tough for even the most tech-savvy of screwdriver-wielding PC junkies to know where to spend their hard-earned cash.

RIGHT CONNECTIONS

The first thing to tackle is the interface, the method by which the hard drive connects to your PC. The interface comes in two flavours: Serial ATA (SATA) and Parallel ATA (PATA). In the beginning was the word, and the word was IDE. Well, technically speaking it's an abbreviation, and it stands for Integrated Drive Electronics; the ribbon connection like the one that snakes out the back of your optical drive. In 2003, when SATA was first introduced, IDE was retroactively renamed PATA, reflecting the way in which data is communicated over the interface. The wide-load ribbon

cache to the processor. The higher the burst, the more information can be carried along the connection at one time; useful for running multiple processes. PATA drives are limited to a burst speed of 133MB/s, whereas the SATA interface can run at speeds between 150MB/s and a massive 600MB/s.

Something to remember when buying a new HD is the fact that the first generation of SATA drives were simply PATA drives connected to the newer interface over a bridge. This bridge means that the drive's performance isn't as good as it

THIS IS A RAID

The pros and cons of multiple drive setups revealed

RAID was formally defined in the late 80s in a paper titled “A Case for Redundant Arrays of Inexpensive Disks (RAID)”. Later, possibly in a response to how particularly un-techy the acronym sounds when written out in full, the name was altered to Redundant Array of Independent Disks. Originally, RAID was designed to use older, less technologically advanced drives together to form one virtual drive with greater capacities and performance. These days you'll typically find arrays in servers as well as in some high-performance home machines.

There are many types of RAID arrays, ranging from simply creating an identikit copy of your boot drive on the fly to combining many drives into one all-consuming storage behemoth. For the benefit of the home user we're mainly going to concentrate on Striping and Mirroring.

Striping, or RAID 0, is a method of speeding up the amount of time it takes to write to a particular drive. Using two or more drives, striping works by splitting a file into equal pieces and writing them to the different drives in the array. Basically, a 1GB file in a two drive array would be split to record 500MB to either device, and therefore would complete the job faster than recording the full

1GB file to a single drive. A common analogy is filling a bath with two taps rather than one.

The problem with this, however, is that if only one of your drives fails then all the data stored in the array is lost. The remaining drives only contain parts of all the information, and there is no way to put them back together without the other drive.

The performance hike isn't as high as you might hope, either, especially if you were hoping to speed up your Windows boot times. In fact, the Windows boot time turned out to be much slower. File transfer times compared to a single drive are what RAID 0 is all about though, and in this at least it succeeds.

The other alternative, known as mirroring, or RAID 1, is a method of backing up your system by recording data to both drives in the array at the same time giving you an exact copy, or mirror, of your main hard drive. This means that if one drive dies you can immediately be back up and running using your mirrored drive. Unfortunately this comes at a performance price, because everything has to be written twice. If you've got three drives, you could experiment with RAID 5, which includes elements of both striping and mirroring.

| BENCH MARKS | RAID0/STRIPED 2XSEAGATE 7200.9 500GB | SINGLE SEAGATE 7200.9 500GB |
|------------------------------|--|--------------------------------|
| WINDOWS BOOT TIMES | 1m 26s | 55.7s |
| RANDOM ACCESS (LOWER BETTER) | 17.1ms | 13.4ms |
| CPU UTILISATION | 2% | 2% |
| AVERAGE READ (HIGHER BETTER) | 85.5MB/s | 50.4MB/s |
| BURST SPEEDS (HIGHER BETTER) | 102.4MB/s | 249MB/s |
| BATTLEFIELD 2 BOOT TIMES | 13.1s | 13.1s |
| 7GB FILE TRANSFER | 2m 7s | 2m 31s |

BOOT IN A FLASH?

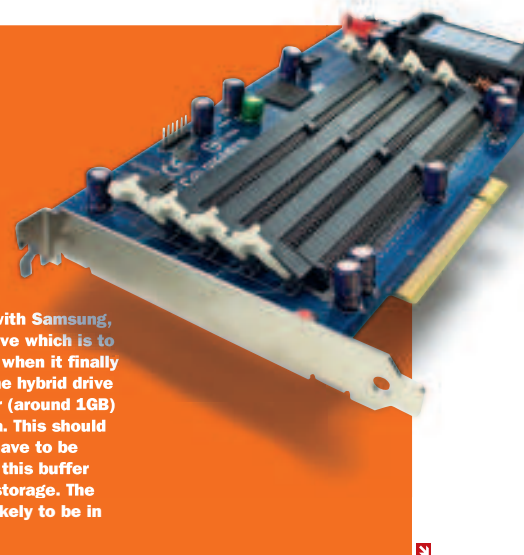
Minute, mechanical machines, or solid state storage. Who will win?

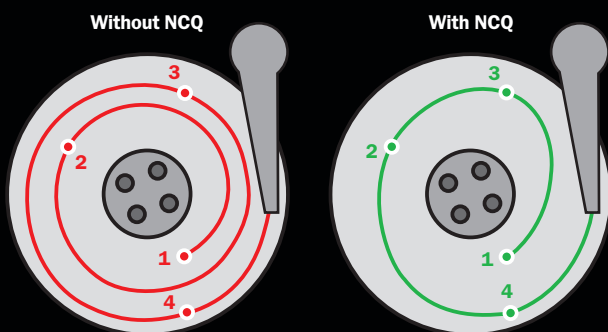
Realistically, the idea of flash memory, or solid state memory, overtaking the standard hard drive as the storage medium of choice is as unlikely as a global ceasefire. The capacities available to the standard hard drive both now and in the future should keep it ahead – in capacity at least – for the long haul, despite the increases that are happening all the time with flash. Currently there are solid state devices running into the tens of GB, but the cost is ultimately prohibitive, with 32GB models being touted for retail at nearly a grand a pop.

Gigabyte's i-RAM (PCF187 50%) gives fantastic speed performance as it uses DDR RAM as a storage device, but only goes up

to 4GB, a minute amount, barely enough even for a Windows installation, and definitely not for Vista's monolithic 15GB drive-guzzle.

Microsoft is in collusion with Samsung, however, to create a hybrid drive which is to be fully compatible with Vista when it finally emerges to the light of day. The hybrid drive is designed with a large buffer (around 1GB) of flash memory to cache data. This should mean that the platters won't have to be spinning all the time, because this buffer will be used for primary data storage. The main benefit of the hybrid is likely to be in the area of boot times.





GOING NATIVE

Native Command Queuing: help, hindrance or many-headed hydra?

Along with the advent of the SATA connection came other advances such as Native Command Queuing. NCQ is a method of ordering a list of requests on the hard drive to facilitate more efficient running. Rather than dealing with a single request in the order that it is presented to the controller, NCQ allows the drive to perform each data transaction in the sequence that it appears on the physical surface of the disk, reducing the distance that the head has to travel.

This function reduces wear and tear on the disk components and as such should increase the life

expectancy of the drive, and thus the integrity of the data that's stored on it. NCQ works best on a server system where there are multiple requests for information at any one time, but on a single-user system the chances are that it will actually reduce performance because it adds a small overhead to single requests.

It can be turned off in the Properties tab of your drive in Device Manager if you have the nForce 4 chipset, and this can help increase the performance of your drive. If you're not running an NVIDIA chipset, however, then you really do have to go around the houses to turn NCQ off.

It would be on a native SATA drive.

The potential performance increases mean that if you want SATA, you should look for a native device.

The next evolutionary step for the interface has been the development of SATA II, sometimes noted as SATA300 or 3.0GB/s. This refers to the burst speed of the newer interface sitting around the 300MB/s mark. For your SATA II drive to function at these higher speeds, however, you must have the latest chipset on your motherboard, supporting the 300MB/s transfer rate. Most of the newer drives have backwards compatibility, so if your motherboard doesn't support it, you can use them on older systems

best part of a decade, with no long-term solution yet devised.

Perpendicular storage has been touted as a temporary measure to prevent the problems associated with superparamagnetism. Previously, the tiny grains were stored longitudinally (lengthways); storing them perpendicularly takes up far less space and means they can be packed tighter together while remaining stable. With longitudinal storage, the agreed limit to stable capacity is around 100-150 Gbit/in², but with perpendicular storage that has already been increased to as much as 230 Gbit/in².

Perpendicular recording is already available, and has resulted

"Thanks to advances in reading and bit storage, drive capacity is growing rapidly all the time"

simply by bridging a certain jumper on the rear of the drive. This does limit it to the original 150MB/s burst speed, however.

OVERHEAD STORAGE

Depending on what you want to do with your new drive, storage space might be the key factor when making a purchase. Thanks to advances in reading and bit storage, drive capacity is growing rapidly all the time.

One of the most important innovations over the past few years has been the development of giant magnetoresistance (GMR). This increases the density of data being stored on a disk by enabling the read/write head to detect much weaker signals. It's based on the discovery that layering a non-magnetic metal layer between two ferromagnetic layers drastically reduces the levels of resistance on the drive. This was introduced by IBM in the mid-Nineties and has been used in most disks ever since.

Unfortunately, when you start to pack the bits of data on the platter too closely and shrink them down as far as they can go, the 100 or so magnetic grains that make up a bit lose their magnetic charge more easily. Microscopic vibrations can then cause irrevocable data loss, making large-scale storage incredibly unstable. This is called the 'superparamagnetic effect', and has been hogging vast partitions inside the brains of the world's most respected hard drive boffins for the

in Hitachi producing the Travelstar 5K160 160GB 2.5-inch drive for laptops and Seagate bringing us the enormous 750GB Barracuda 7,200.10 3.5-inch drive (PCF190, 86%). By the end of the year you should expect to see the first terabyte desktop drives gracing these hallowed pages.

Capacity does not just affect how much data you can store on a drive. If there is an increased density on a platter, then no matter what the RPM speed of the drive is, more data will be passing the read/write head every second. Therefore with increased capacity comes increased performance. We checked out a number of different sized drives where practically the only difference was capacity, and found that performance across all tests increased along with the size. In Windows boot times alone, the difference between a 500GB and 160GB drive was 12s and the difference between burst speeds was over 50MB/s.

When it comes to equivalent RPM speeds on a drive, if you're interested in extracting the best possible performance and data recall from your drive, you're better off going for as large a capacity drive as you can afford. Which leads us on to the topic of the moment; the size versus RPM debate. Is it better to have a faster-spinning drive or one with a higher capacity? Our tests (check out the 'Revolution' boxout for a closer look) point to having a high-speed drive booting

REVOLUTION

The argument of speed versus capacity has long been bandied around, but which camp wins?

For the last decade the RPM of desktop drives has remained around the 7,200RPM mark, until the Raptor from Western Digital, which achieved 10,000RPM. When it was first introduced, it was the fastest drive out there, but because of the importance of capacity and areal density, the 36GB per platter meant that its performance was falling behind much slower competitors.

The recently released Raptor X and Raptor 150 have doubled the capacity and are back on top in terms of speed. Our results show that in

every test bar the BF2 boot it came out on top. The 8ms access time is phenomenal, as are the average read times, which were only really comparable to the Striped RAID array we ran with two 500GB Seagate drives. The Windows boot time was also excellent, breaking the 50s barrier with ease.

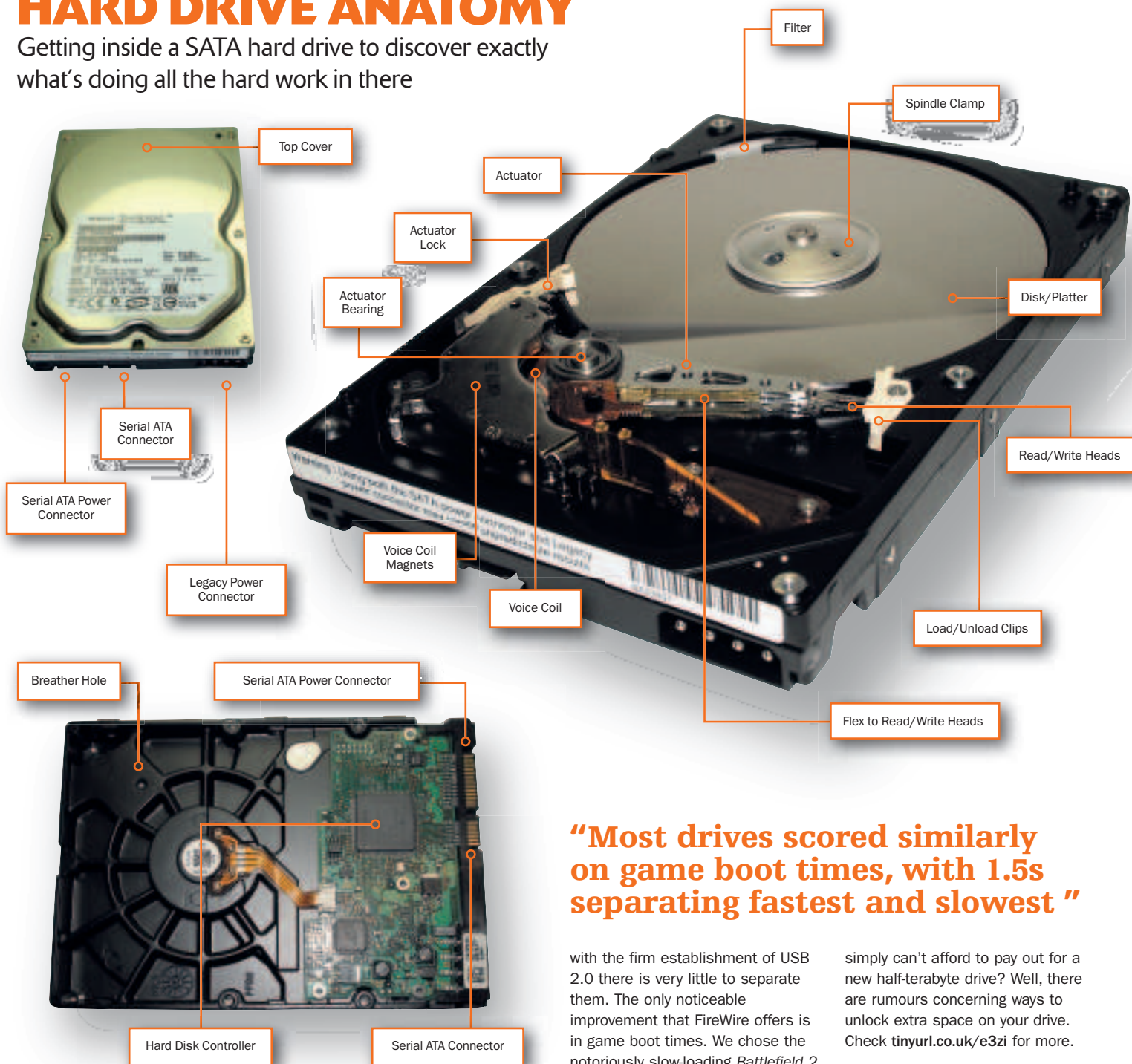
The price per GB, however, is not so good. At £186 it comes out as £1.24/GB. So it's a compromise then that wins out, a Raptor for the Windows boot and a high capacity drive for your main data storage.

| BENCH MARKS | WESTERN DIGITAL RAPTOR 150GB 10,000RPM SATA150 | WESTERN DIGITAL 160GB 7,200RPM RUNNING @ SATA150 |
|------------------------------|--|--|
| WINDOWS BOOT TIMES | 48.6s | 54.8s |
| RANDOM ACCESS (LOWER BETTER) | 8.1ms | 13.3ms |
| CPU UTILISATION | 2% | 1% |
| AVERAGE READ (HIGHER BETTER) | 78.2MB/s | 55.1MB/s |
| BURST SPEEDS (HIGHER BETTER) | 135.8MB/s | 130.7MB/s |
| BATTLEFIELD 2 BOOT TIMES | 13.1s | 13.1s |
| 7GB FILE TRANSFER | 2m 8s | 2m 38s |



HARD DRIVE ANATOMY

Getting inside a SATA hard drive to discover exactly what's doing all the hard work in there



“Most drives scored similarly on game boot times, with 1.5s separating fastest and slowest”

your operating system with the rest of your data stored on a high-capacity SATA300 drive.

When you're talking about hard drives you can't forget external storage. USB 2.0 and FireWire connections both provide enough speed to be viable for the largest of triple-disc movie files. Even with such huge capacities available inside your rig, you've got to think practically; do you want a unit that you can move between different setups in your home or office, or are

you just working from one desktop machine? If you've got one permanent system then an external drive offers you no benefits, file transfers are slower and trying to boot an OS from one is futile. With multiple systems, however, being able to use large amounts of data on different machines saves you hassle and time.

FIREWIRE OR USB 2.0?

Much was once made of the benefits of FireWire over USB, but

with the firm establishment of USB 2.0 there is very little to separate them. The only noticeable improvement that FireWire offers is in game boot times. We chose the notoriously slow-loading *Battlefield 2* as our boot test, and using the FireWire connection it scored just over a second faster against USB 2.0 (tested on the same drive).

We did find, however, that most drives scored incredibly similarly on game boot times, with only 1.5s separating the fastest from the slowest. Given that it's often thought that the hard drive is what slows down game access times, our findings would suggest that the real bottleneck is more likely to lie with the memory and the CPU.

Buying a new hard drive is all well and good, but what if you

simply can't afford to pay out for a new half-terabyte drive? Well, there are rumours concerning ways to unlock extra space on your drive. Check tinyurl.co.uk/e3zi for more.

SPACE RACE

Before a hard drive goes through examination at the factory level, its capacity is largely unknown. A 200GB drive could be physically identical to a 320GB drive, but only passed through the qualification at 200GB. It's the same as how some CPUs – which can have extra clockspeed unlocked – you can sometimes unlock the closed sectors on a hard drive. We can't endorse this practice because it can corrupt the data on your drive, so back up before you even consider it. Consider yourself warned.



INTERFACE YOUR DAEMONS

Which wires work best with you? Internal, external, SATA or PATA?

Since Serial ATA came to the fore IDE, or Parallel ATA, has been pushed further and further into the background. PATA has a far slower burst speed and therefore slower transfer speeds, plus incredibly unwieldy cabling that takes up a huge amount of space in your rig.

SATA is the new-ish kid on the block, offering significantly faster performance in all areas. Boot times are lower and the burst speeds are far higher, especially with SATA300, allowing far more information to be accessed at the same time.

Another advantage of the SATA connection is the fact that it's now

far easier to connect multiple drives to your system.

External interfaces – USB 2.0 and FireWire – simply cannot compete with their internal contemporaries in anything other than capacity and portability. File transfers regularly clock in at well over twice as long as standard SATA, or even PATA drives.

Realistically, if your motherboard can handle it, go for a SATA300/SATA II drive. The performance increases over other interfaces make it the logical choice, and even if your mobo can't handle 300MB/s burst speeds most SATA300 drives can be easily forced to run at 150MB/s speeds.



RECORDING THE FUTURE

Now that perpendicular storage has broken the barrier set by the superparamagnetic effect where does the humble hard drive go?

We recently spoke to John Fox from Hitachi Global Storage Technologies about what the future held for hard drives. With the news that Microsoft was working on hybrid technology for compatibility with Vista, with a view to drastically increasing boot times, this was high on the agenda.

But the real future of the hard drive, according to Hitachi, lies elsewhere. We should see a real density reaching well into the thousands of gigabits per inch square. Now, perpendicular technology can only take us so far before the superparamagnetic effect raises its ugly head once more and other technology must take over.

Within the next five years we should see the rise of Patterned Media. The main concept behind this technology is to replace the hundreds of miniscule magnetic grains that make up a bit and replace them with a single, larger

grain for each bit. The media is physically patterned with 'islands' designed to house each individual bit, and because of this it results in a more uniform coverage of the platter. Estimates suggest that because of the increased stability the areal density should be increased by two orders of magnitude compared to conventional media.

Further in the future lies the concept of thermally assisted recording, which will supposedly integrate both optical and magnetic recording in the read/write head. The upshot of this is potentially high temperature, low coercivity conditions for writing and high coercivity at room temperature. Basically, this means that it is easier to write to at the higher temperatures and stays far more stable and immovable at normal temperatures.

CACHE TEST DUMMIES

What differences do the various cache sizes make to your system?

Since the 80s all hard drives have come with an embedded processor on the disk's main board to control the device itself and the interface. This comes with its own memory, known as the disk cache. This is used to store the data in bits coming and going from the physical surface of the disk itself.

The cache ensures that the drive and PC are communicating in synch and controls the consistency of the data. These days you can get 8MB and 16MB caches, and we wanted to see if there was really any difference between the two values. We chose

two 250GB Western Digital drives which were identical in all respects apart from the different cache sizes, just to see what all the fuss was about. Price-wise there is little to choose between them: the two drives here, the WD2500JS and WD2500KS, cost just over £50 each.

The same can be said for performance too. The HD Tach scores were practically identical and the only benefits that came from the doubled cache size came in the shape of a little over three seconds off Windows boot times and 15 seconds in the 7GB file transfer.

| BENCH MARKS | WD2500JS 250GB 8MB CACHE | WD2500KS 250GB 16MB CACHE |
|------------------------------|--------------------------------|---------------------------------|
| WINDOWS BOOT TIMES | 54.6s | 51.8s |
| RANDOM ACCESS (LOWER BETTER) | 13.3ms | 13.4ms |
| CPU UTILISATION | 1% | 1% |
| AVERAGE READ (HIGHER BETTER) | 55.2MB/s | 55.5MB/s |
| BURST SPEEDS (HIGHER BETTER) | 168.8MB/s | 170MB/s |
| BATTLEFIELD 2 BOOT TIMES | 13.1s | 13s |
| 7GB FILE TRANSFER | 2m 29s | 2m 14s |

THE VERDICT

Hopefully by now the weird world of the hard drive acronym shouldn't be such an unfathomable place.

Benefits from specialist, server-level efforts such as Native Command Queuing should be taken with a pinch of salt for the home user. They may be brilliant for massive servers, but if you have a modern drive in your machine at home, make sure NCQ is turned off for best gaming performance.

RAID is a similarly uninspiring affair. The performance boost offered by striping really isn't worth it, in our opinion, unless you're using two budget drives. For the security-conscious, mind you, a mirrored RAID gives you ultimate peace of mind, backing up all your data automatically.

One of the biggest surprises to us, though, was how little a bigger cache affects actual performance these days. We fully expected a much more marked increase by doubling the cache from 8MB. Still, since there's little difference between price points of 8MB and

16MB drives, you may as well plump for the larger, slightly faster buffers.

A high-speed drive with mammoth RPM speeds is key to getting a decent system boot. something like the 10,000RPM Raptors is a good place to start. Their relatively low capacity, however, means that as a general storage solution they really don't stand up. Backed up with something like the 750GB perpendicular Seagate however, with the increased speed inherent with the increased capacity, your system will happily chew through any data that you care to throw at it. **PCF**



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Flight Sim X

Forget the troubles of real-life air-travel and take to the skies

Numpad Pitch/Yaw
Space Mouse look
G Landing gear
S Switch View
Num 9/3 Throttle up/down



Star Wolves 2

Like *Pigs in Space*, except with sharper teeth

LMB Select
RMB Default action
Hold RMB Move camera
MSWheel Zoom
Tab Map



TerraWars: New York Invasion

Aliens take over New York; nobody really notices...

WSAD Movement
LMB Shoot
RMB Zoom
H First Aid
X Head lamp



NFL Head Coach

All the fun of the NFL without getting hurt

LMB Select
I Action menu
Crs keys Change plays



Abyss Lights: Frozen System

Good old fashioned space battles, and no tedious trade

LMB Shoot
RMB Missile
MSWheel Rotate
Mouse Pitch/Yaw

REGULARS

Buyer's guide

The minefield of PC hardware can be a daunting place, but fear not, our comprehensive buyer's guides make it easy.

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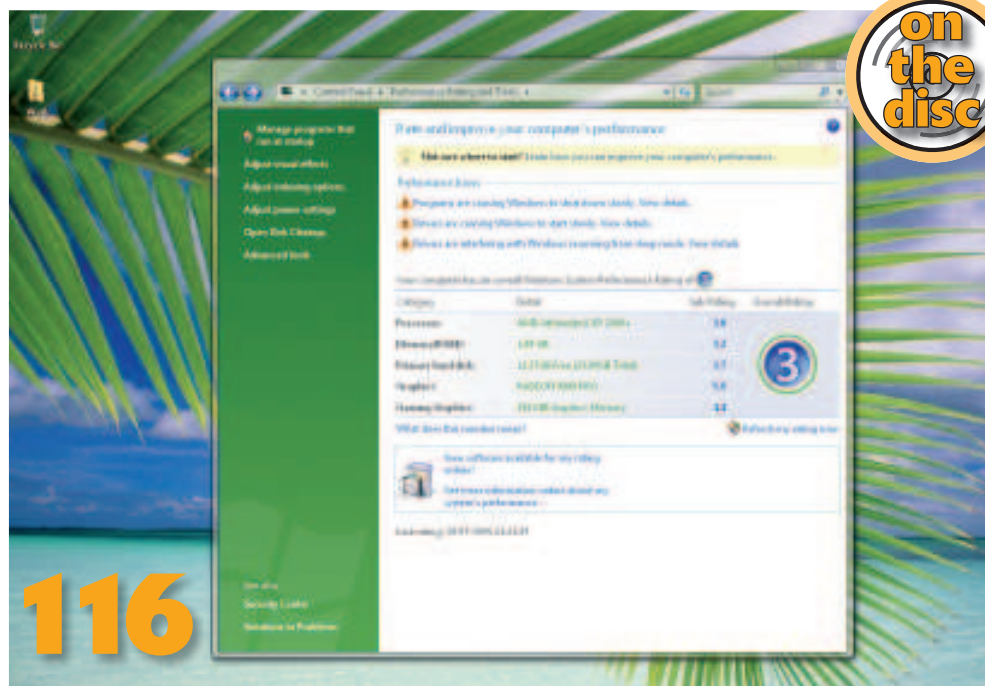
By email or phone: support@futurenet.co.uk, 01225 822 743

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DO THIS

Creation is good for the soul. Try it yourself

116 Endless vistas

Stuck inside the bloated form of the latest Vista Beta? Tweak it to the max with our guide

118 Electronica nervosa

Make all the wibbly noises your Kraftwerk-endecked heart could desire with *Audiomulch*.

120 FTP foolery

We show you how to pick up and fling your files around, trouble-free, with *WS_FTP*

121 Neo-classical

Avoid those dry-as-Dubai *Powerpoint* presentations using *NeoBook*'s clever interface

122 House proud

The second part of our *Oblivion* guide lets you build your very own des res

124 Mighty morphin'

Turn your mates into Wookies using *Morphbuster*'s powerful animation tools

125 Feel the burn

Burning your own files and videos to disk now couldn't be simpler with *CopyToDVD*

126 Big up the monitor

Increase the size and apparent depth of your monitor's visual with a Fresnel lens

For a full list of everything on the disc please refer to the disc's interface. Controls for the games are listed there too.



Beta tweaker

Without all the oh-so necessary optimisation, Vista's public beta runs like a three-legged giraffe. Tweak the freak out of it with our simple guide

118

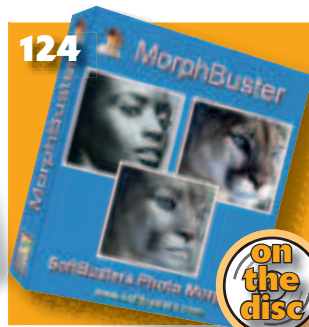


Reach the Apex of your musical talents

It may not be quite Mozart, but electronic arts of the musical kind are at your fingertips with *Audiomulch*'s soundscapes.

Trial Software

124



Spawn your own unholy creatures

Using *Morphbuster*'s quality morphing software you can create your very own hybrid monsters with a few simple mouse clicks.

Full software

125



Back up your DVD collection

With all the licence-free video on the web it couldn't be easier to burn your own entertainment, especially with *CopyToDVD*.

Full Software

ON THE DISC

Check out the 'on the disc' boxout in each workshop to find out what other relevant programs are waiting on the PCF disc, as well as how to install or upgrade new apps.



Andrew Sutcliffe wonders why even those who hate MS have downloaded Windows Vista

When it was released to the public in early July, Windows Vista Beta became one of the most sought-after downloads on the internet. People were made to wait hours for their download links and activation keys, and it got to a point where Microsoft suggested people simply order the DVD instead. Indeed, the download was completely withdrawn soon after, and unless you frequent filesharing sites you'll have to wait until the RC1 version later this year.

So why has Vista – superficially not a terribly exciting OS upgrade – become such a hot product? After all, it has had some pretty scathing press in recent months – some of it perfectly justifiable. The fact is, of course, that as PC fans, we're always interested in something new. We're especially interested if we can get something new for free.

THE WAIT IS NEARLY OVER

Add to this the time scale – after all, we're not Apple Mac users who can look forward to the joys of buying a new OS every 12 months or so. It's been a long time since Microsoft deigned to bestow an entirely new Windows operating system on us. And let's be clear about this: we need any new incarnation of Windows to be reliable, stable and pleasant to use, because if Windows isn't good, hardware support won't be up to scratch. If this situation persists, then a lot of the things we want to do with our PCs won't be possible either. See the sorry state of Mac gaming for more evidence of this.



The Vista Beta is one of the most popular downloads on the internet.

Have your say forum.pcformat.co.uk

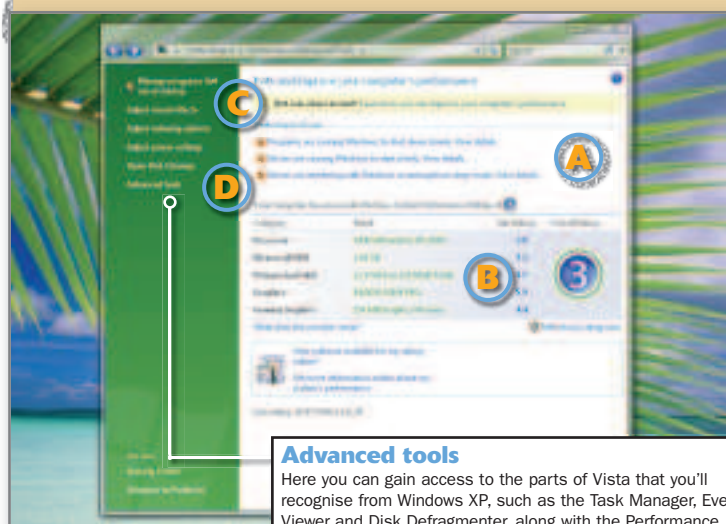
Speed up Vista Beta 2

Vista may have been delayed, and it might be the subject of some pretty intense media scrutiny, but Microsoft's new OS is on its way, and chances are you've already given the public beta version a spin (although Microsoft has now withdrawn it). It's easy to be dismissive or cynical about any iteration of the Windows OS, but Vista has something new to offer. It's kind of hard to tell just what at the moment though, since Beta 2

isn't exactly the fastest kid in class. Gamers in particular have found it slower than XP so far.

Here, we're going to look at a few tweaks aimed at getting more from your beta. Remember, the Beta is a version of Windows Vista Ultimate, so there's a lot of bloat that you might not have to deal with in Vista Home Premium. It's also worth noting that a lot of the apps are debug versions, and are operating below optimal performance – read on to find out more. **PCF**

UP CLOSE PERFORMANCE TOOLS



Advanced tools

Here you can gain access to the parts of Vista that you'll recognise from Windows XP, such as the Task Manager, Event Viewer and Disk Defragmenter, along with the Performance Diagnostic Console.

A PERFORMANCE ISSUES The place to look if you're noticing significant slow-down while using your PC. A quick glance here will tell you names of the programs causing problems with start-up, shut-down and sleep mode. You'll probably find that the biggest problem at the moment is with drivers. Check your device manufacturer's websites for new versions of dedicated Vista drivers.

B PERFORMANCE RATING Click on **Refresh My Rating Now** to update your scores. The rating will only change when you make changes to your hardware, so if there's an obvious bottleneck in your system, this is an easy way to find it. It seems the weak link in our system is the creaking Athlon XP2600 CPU. That'll mean a new mobo as well, then.

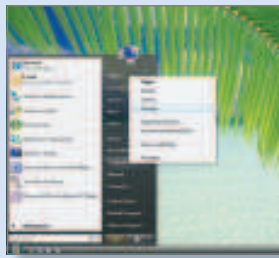
C MANAGE START-UP PROGRAMS Click this to launch Windows Defender's *Software Explorer* program, where you can disable programs that load on startup. You can use the information given by the Performance Issues dialog to work out which you might need to disable to increase your system performance.

D OTHER ADJUSTMENTS These tweaks won't have significant effects on Vista's performance, but if, like us, you like to squeeze every last drop of power from your system, you can turn off power saving options, dial down the visual effects and run the disk clean-up.

"It's easy to be dismissive or cynical, but Vista does have something new to offer"

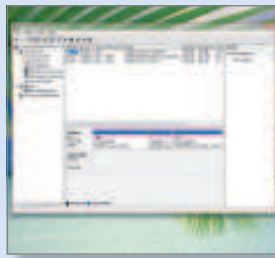
Staying safe

Give Vista more space without damaging your precious data



1

Giving Windows Vista some extra space on your machine is easy: you can resize your PC's hard disk partitions without risking loss of stability or your precious data (or MP3s). Simply click the **Start** button, then right-click **My Computer** and select **Manage**.



2

That launches the Computer Management window. In the left-hand pane, expand the **Storage** section and click on **Disk Management** to get a view of all of your hard drives and their partitions. You'll also be able to see their capacities and current free space.



3

Now you need to choose which partition you want to expand – if it's the one Vista is on, it'll probably be the C: partition (even if it wasn't when you installed it). Right-click on it and then click on **Extend Volume** or **Shrink Volume** and follow the wizard.

Making Vista work harder

More easy ways to improve performance



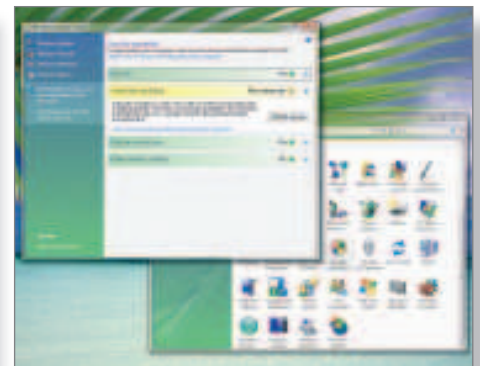
1

One of the biggest changes from Windows XP is that Vista is much more pleasing on the eye. That means your graphics card is as important as ever. Go to your card manufacturer's website to download and install the newest Windows Vista Beta driver.



2

As impressive as the new Windows Sidebar and all of its associated gadgets are, some of them will eat up your system resources. Decide which ones you really need – and remember some of them take up internet resources too. Click the cross to close unnecessary gadgets.



3

Reduce the amount of hand-holding forced upon you by Windows Vista by turning off Security Center notifications. Access the Security Center by clicking **Start→Control Panel** and double clicking the **Security Center** icon. Take a look at the left-hand pane.



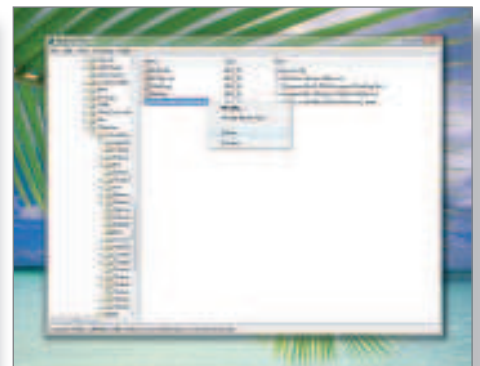
4

Click **Change the way Security Center alerts me**. A new dialog box will open up with two options. Click the bottom one that says **I do not want notification messages from Security Center** and you're once again free to make your own decisions about your PC.



5

Flicking between windows in 3D has been one of the real draws of Vista, but many people struggle to actually get it working for themselves. You need to be using the Aero interface, and it's simply a matter of holding **[Windows]** and **[Tab]** and scrolling with the mouse wheel.



6

A simple registry tweak turns off more Fisher-Price mollycoddling. Run *Regedit* and navigate to **HKCU_Software_Microsoft_Windows_CurrentVersion_Run**. Now simply right-click on the **WindowsWelcomeCenter** key and select **Delete**. Then reboot your PC to apply the change.

Get jiggy with your PC

Jim Rossignol gets lost in the jungle massive of *AudioMulch*

Electronic music performances are a little disconcerting for those of us more familiar with trumpets and guitars. The musician is probably on stage, but he's hunched over a laptop, and you have to wonder: is he really playing anything, or did he just set an MP3 running in *Winamp*? Well now you can find out just what it means to 'play' your laptop, with one of the live music tools used by electronic auteurs such as Four Tet. A 90-day trial of *AudioMulch* is on the disc and it provides a unique tool for musical performances.

PATCHY NOISES

The modular 'patch' system means that you can set up improvised sequences of a kind that would otherwise only be possible with more traditional analogue instruments. Of course *AudioMulch*'s sound is purely electronic, so you're able to make up ambient droning or thunderous drum 'n' bass as you go. If you decide to become Brian Eno, or if you desire such a tool to integrate into a larger musical arsenal, then the full version can be unlocked for \$89, which is about £45.

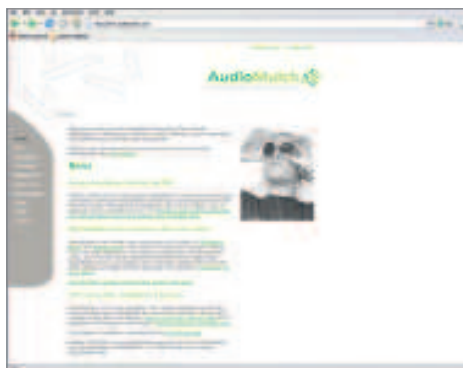
ON THE DISC

YamiPod

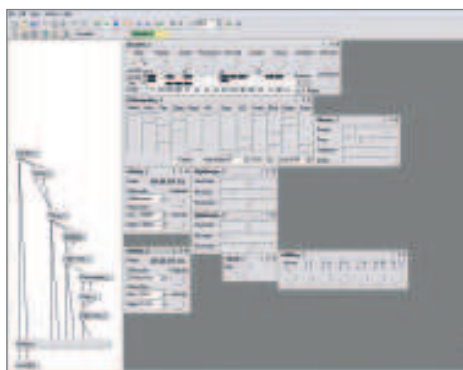
Apple's DRM-happy iTunes app may look pretty, but will it let you rip songs from any iPod into your PC's vastly distended music folder? Will it heck. This dandy little app, however, will. www.yamipod.com

MP3Knife

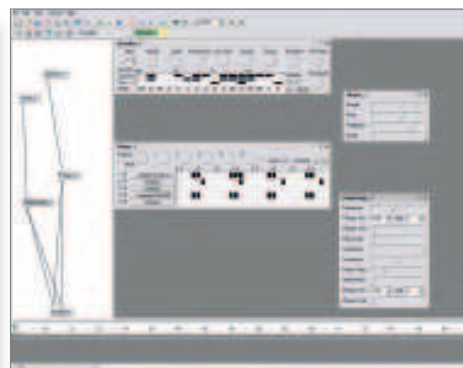
Our fashionable friends tell us with veracity that podcasting is all the rage among 'the kids' at the moment, and with this simple MP3 editor, you could jump on their bandwagon, too. www.mp3knife.com



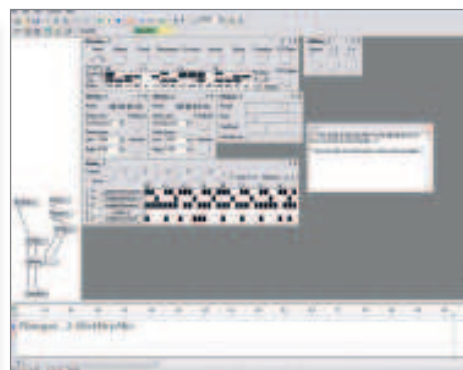
1 Once installed, you've got three months to play around with *AudioMulch*. It's an instrument in its own right and it's easy to get a beat running by learning its 'patch' system. Right-click on the left-hand pane and select **Signal generator** and then **Bassline**.



3 Start fiddling with the settings on the edit pane you've just brought up and you'll hear the bassline change. Next, try feeding the bassline output through some effects. Right-click on the left-hand pane again and create some effects patches on the fly.



2 The signal generators make all the noise, but you'll only hear it if you left-click and drag from the output on the bottom of the patch you created to **Sound out** at the bottom of the panel. Do that for both channels then use the bassline's right click menu to edit it.

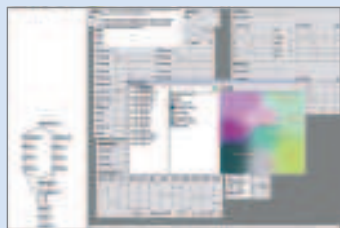


4 As you link together signal generators, via effects, to the sound output you'll begin to create 'contraptions'. You'll notice that the mute can be used to bring the new noises in after a single bar, and all the effects can be tweaked in real time. This allows you to play a track live.

Special jazz More nutritious 'Mulch ideas



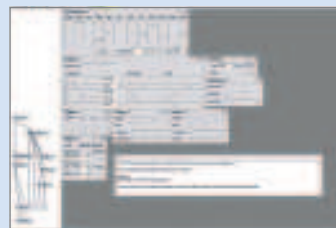
1 Instant jungle tracks, as well as a load of other musical styles, can be created by modifying the example tracks that come with *AudioMulch*. Try dropping in **jungleMadeEasy** and playing about with the basslines by hitting the randomizer for astonishing credibility on the dancefloor, or something.



2 The Metasurface is one of *AudioMulch*'s best tools. It creates a coloured graphical snapshot of all the contraptions you have set up. By dragging your mouse across this field you can alter all the settings automatically. This creates some impressive effects, especially for live performance.



3 *AudioMulch* can easily be integrated into more complex electronic setups. The patch system is ideal for generating swathes of sound, be it drums or drones, so it can usefully supplement a live band. If you already use midi systems then you can sync *AudioMulch* in to play alongside your other instruments.



4 It's possible to create a near-infinite set of sounds with the tools that are provided in this package, although more effects and samples can be imported. The contraptions can also be set up to produce constantly evolving noises instead of loops. Check out the *Sewer Rat* demo file for an example.

Set up an FTP client

Mike Channell transfers in style with Ipswitch *WS_FTP Home*

Connect button

When pressed, this large, important-looking button brings up a list of saved profiles. You can opt to save login details to speed things up if you've no security worries. If you're trying to log in to a server that accepts anonymous connections, use 'anonymous' as the login and any email address as the code.

Main view

The main view is reasonably straightforward. On the left you have your computer with all those folders you've lovingly created (plus a few that were probably accidentally put there by the downloader you unwittingly installed). On the right is the folder structure of the FTP server. Copying stuff to and fro is a simple case of dragging files across the divide.

Views button

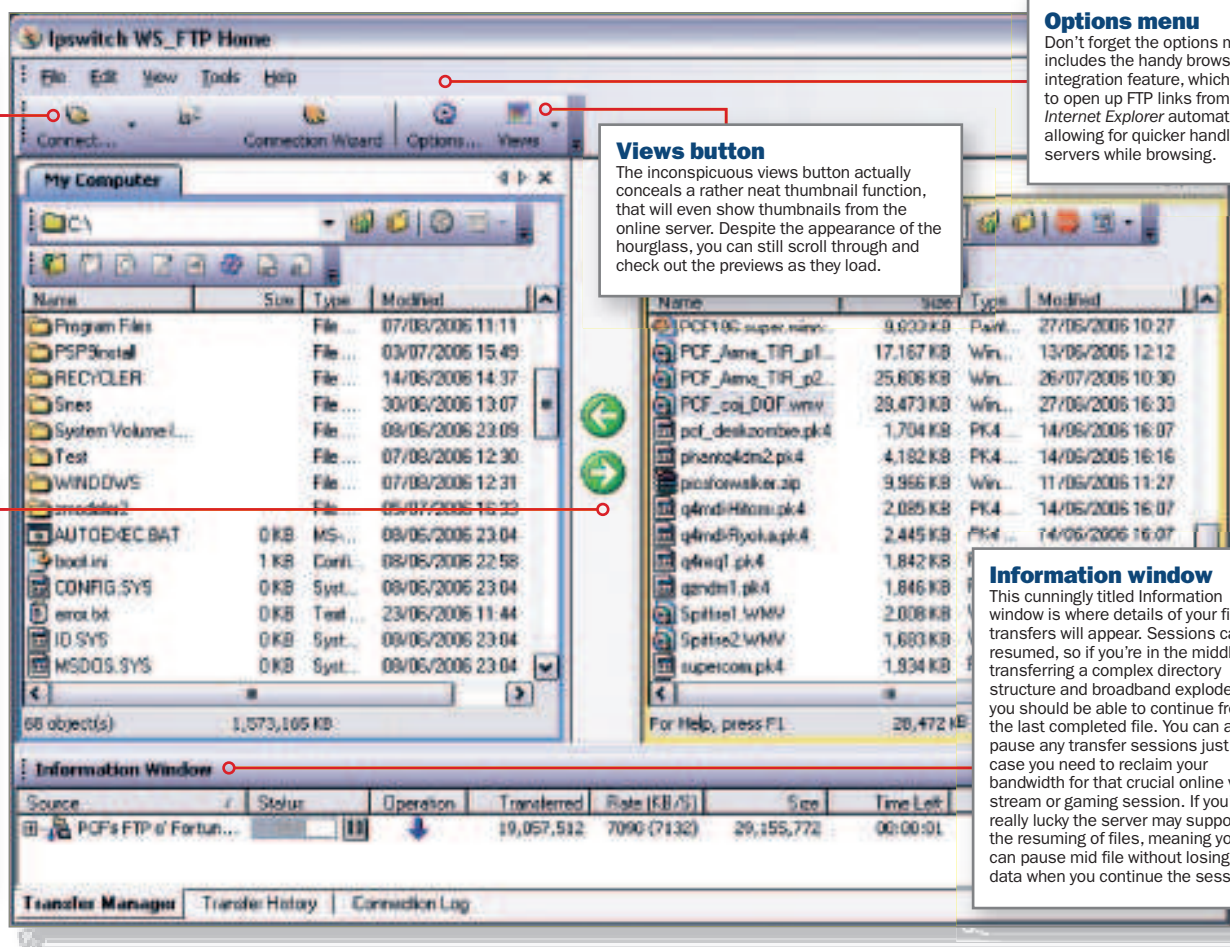
The inconspicuous views button actually conceals a rather neat thumbnail function, that will even show thumbnails from the online server. Despite the appearance of the hourglass, you can still scroll through and check out the previews as they load.

Options menu

Don't forget the options menu. It includes the handy browser integration feature, which offers to open up FTP links from Internet Explorer automatically, allowing for quicker handling of servers while browsing.

Information window

This cunningly titled Information window is where details of your file transfers will appear. Sessions can be resumed, so if you're in the middle of transferring a complex directory structure and broadband explodes, you should be able to continue from the last completed file. You can also pause any transfer sessions just in case you need to reclaim your bandwidth for that crucial online video stream or gaming session. If you're really lucky the server may support the resuming of files, meaning you can pause mid file without losing any data when you continue the session.



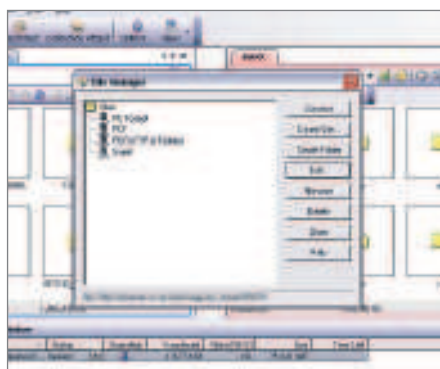
Many of the internet's download treasure troves are housed on file transfer protocol (FTP) servers, and frankly Internet Explorer's Windows Explorer-based support is about as useful as a chocolate teapot. That's why, on our disc this month, we have the wondrous spoils of a full version of Ipswitch *WS_FTP Home*, which offers a solid set of features, including the invaluable option to resume interrupted file transfers. It's such a great application we thought we'd give you a quick run through of the basic features to get you started. **PCF**

Upgrade

If you like what you see here, then save 20% on *WS_FTP Professional 2007*, which adds features such as FTP to FTP transfer and file splitting. Nip over to www.ipswitch.com/future for your discount.

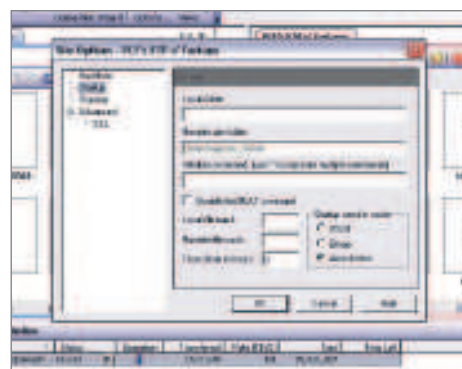
Transferring your data

Configuring your connections is a cinch



1

The site manager menu is a ludicrously simple way of setting up profiles for the various FTPs you wish to use to move your data around. You can arrange so that details, such as login and password, are saved making connecting all but instantaneous.



2

Delve a little deeper, and you can alter settings like the default directory (often required for home internet web space and the like) and even set a default local folder to open to make synchronisation between your FTP and your home PC easy.

NeoBook 4.0 SE

Tanya Combrinck **makes an interactive e-book with ease**

The ubiquitous **PowerPoint** is all well and good for throwing together those dry presentations at work, but there's a more interesting option available to you for your leisure time creative endeavours.

NeoBook is a presentation builder that incorporates a simple programming language, enabling you to add a level of interactivity to your work. If you've never programmed before, never fear – all of the code can be generated using **NeoBook's** questionnaire system.

Your book might be a simple presentation, or it could be an interactive story, game or quiz that's more like a TV programme than a list of animated bullet points. With **NeoBook**, you can incorporate most media, including sound, video, animation and websites. The final article is compiled into an executable file anyone can use.

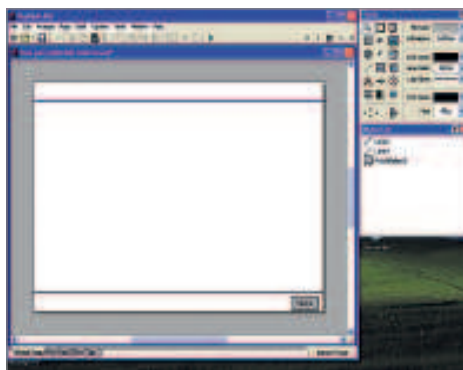
There's a full version of **NeoBook Professional 4.0 SE** on the disc that has previously been sold for £140. All you need to do is register online when prompted, being sure to do so before January 2007. **PCF**



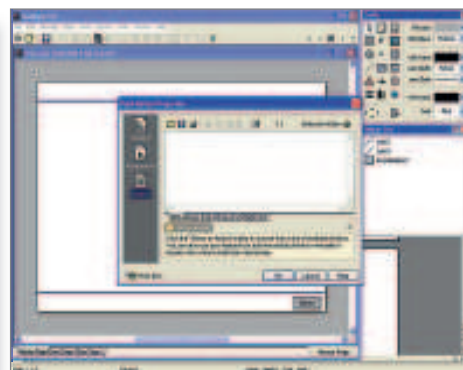
Upgrade

Upgrading to the latest version of **NeoBook Professional (5.0)** couldn't be easier. As a reader of **PCF**, you can save £28 by buying online

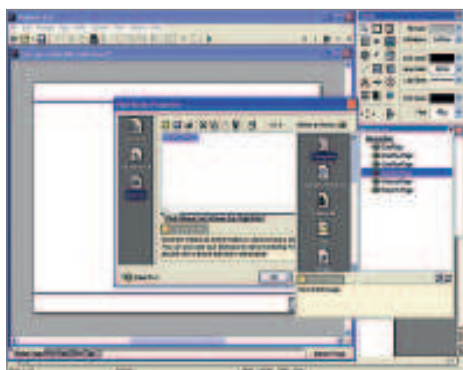
www.ttp.co.uk/secure/nb5mag.htm



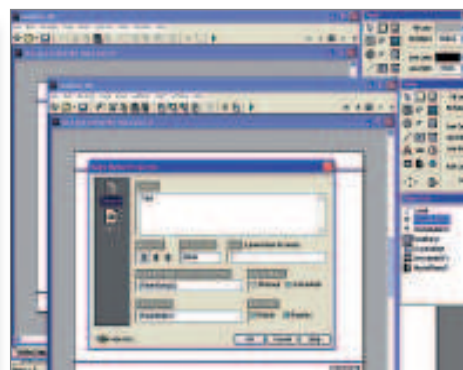
1 Every **NeoBook** project has a master page for setting up elements that will appear on each page, such as borders and headings. Use the tabs running along the bottom left of the window to navigate between pages, and right-click to add new ones. Right-click objects to configure them.



2 We've added a button to return the user to the index. Using the **Push** button tool from the toolbox, draw the button and give it a name. Click on the **Actions** icon. Each tab shows the code that will be executed for each user input, which you can edit yourself or let **NeoBook** do it.

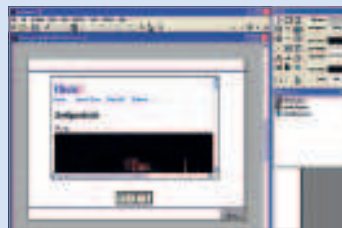


3 Now click **Select an Action** on the top right. This brings up all the actions that a button can perform. Select **GoToFirstPage** from the **Navigation** section. You will see that it has been added on the **Click** tab. You can add a search tool in the **Messages/Interaction** category.

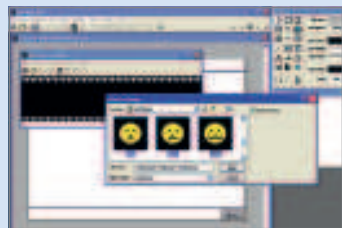


4 You can respond to user input. If you create a radio button, for example, you can see that its status is stored in a variable of the format [RadioGroup2]. Actions can be set up that are conditional upon the status of this variable. See the help files for the syntax of **NeoBook** code.

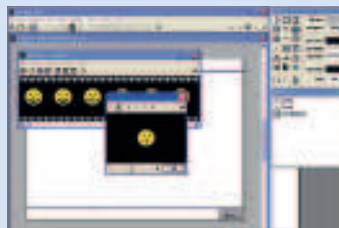
Adding content Video, sound, animation, websites, whatever...



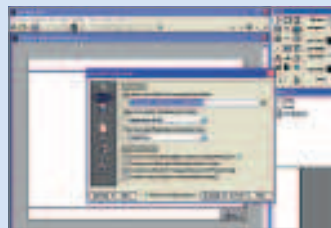
1 Adding content to your book is a breeze. Everything appears in re-sizable boxes, drawn using the appropriate tool from the toolbox. Draw basic page furniture as well as boxes containing media players for sound or video, browser boxes for websites, radio buttons, drop-down lists and text input boxes.



2 **NeoToon** runs as a separate app from **NeoBook**, and is a simple way to create an animation. It could be a small icon or something more elaborate. You need to draw the frames in another package such as **Paint** and then save them. Click the **Add** button in **NeoToon** and select all the frames to pull them in.



3 Now use the **green arrow** to run your animation. You might need to add frames to make the transitions less jerky, and you may want to play around with the speed settings in the **Run** window. When you're satisfied with the animation, save the file and add it to your book using the **Animated GIF** tool.



4 As you're working on your book you can click the green arrow to preview how it will run. The final step is to compile your creation. Choose **Compile/Publish** from the **Book** menu. **NeoBook** can compile your book into an executable application so that anyone can run it without needing a viewer.

Build a house in Oblivion

part
1 2

Tom Francis finally moves lock, stock and barrel to Cyrodiil, and brings along the evil dead, some ridiculous loot and a highly unpleasant beverage



Pretty in pink

The attractive glow on our avatar is the reflection effect of our Mirror Shield in action. You can actually keep it equipped while you're using a two-handed weapon (presumably on your back, but it's not shown here).

Untrash the place

The house we've copied is full of junk. That suits our style, but getting rid of it would be easy too – just drag a box round it and press [Delete]. You don't have to worry about deleting chunks of the house because it's one big object.

Stunning

We've designed our new monster Paralicthic to have no damaging attacks – all he can do is paralyse you with a spell. He's collapsing here because we've given him a taste of his own medicine with the shiny new item we added.

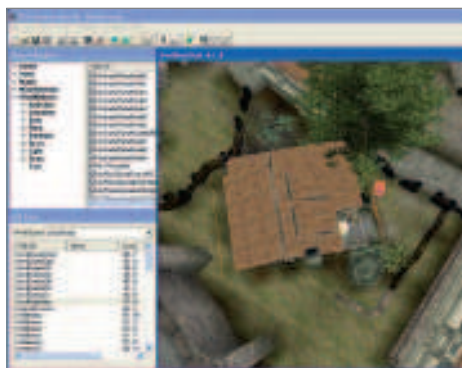
Last month we took you through the terraforming of an island east of Bravil, but don't worry if you missed it. Whether your building a house on the shores of our idyllic isle or in a forest clearing on the other side of Cyrodiil, the method's the same. But the truth of the matter is that if you tried very hard, and were very good, you might be able to construct something that looked exactly the same as hundreds of other buildings in Tamriel. So instead, we're simply going to copy one of *Oblivion*'s more distinctive domiciles, and spend most of our time filling it with interesting things rather than fussing over architecture.

PROPERTY LADDER

There's an intriguing abode in Anvil that looks both unusual and a little run down – exactly what we want. It belongs to a mysterious stranger who may be familiar to any professional Thieves, so he won't mind us taking a copy. Our house is going to be haunted, and his is fixed up to look abandoned, so it's a stylistic match. Once we've built our house by the sea, we want to add in a unique enemy, and some one-off items with which to deal with him. Straightforward, powerful foes are generally just arduous to kill, so we're going to create a more interesting challenge with a more inventive solution. **PCF**

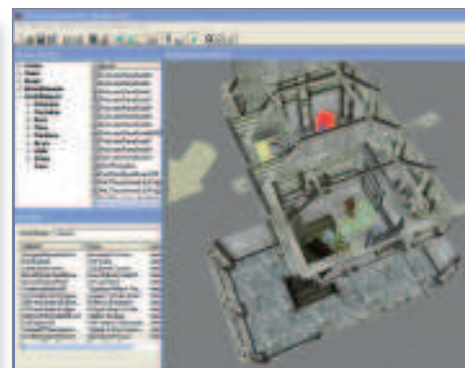
Under construction

Build your abode, then haunt it



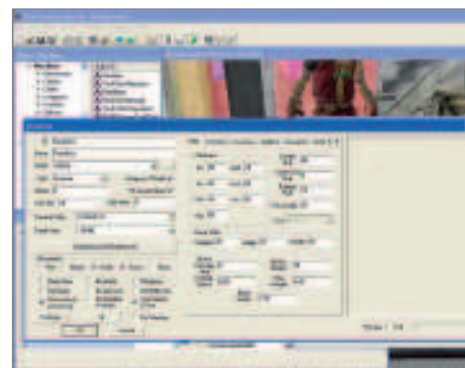
1

Pick **Anvil World** from the list in the Cell View window, and double-click **AnvilExterior01**. The abandoned house is in the lower middle, tucked behind a small tree. Draw a box around it to select it, and go to **Edit→Copy Render** ([Ctrl]+[C] isn't reliable).



2

We also need to copy the interior of the house. Select **Interiors** from the menu in **Cell View**, and find **AnvilAbandonedHouse**. Right-click it and choose **Duplicate cell**. Now double-click the duplicate, and delete the food and the person from the menu on the right.



6

Now let's create a new enemy. Find a **Lich** in the **Objects** window under **Actors→Creature→Undead**, and double-click it for properties. Change its name to **Paralicthic**, set its hit multiplier to 40, then go to the **Inventory** tab and remove his weapon (**right-click→Delete**).

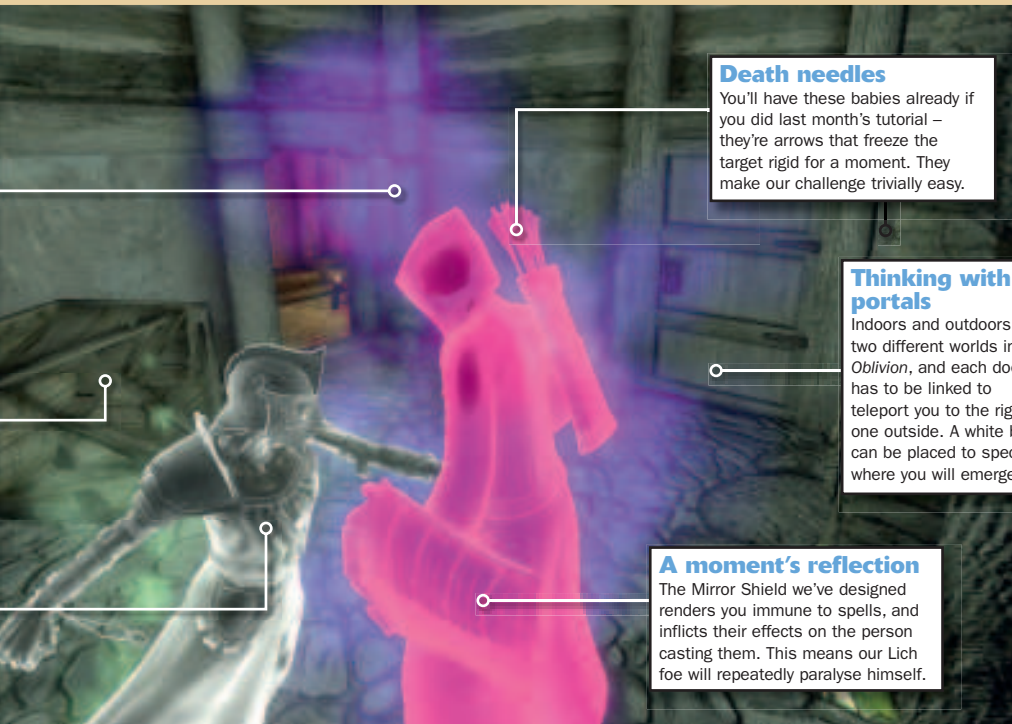
"Learn to copy a domicile, fill it with interesting items, and then haunt it"

ON THE DISC

YOU WILL FIND AN EXPANDED VERSION OF THIS TUTORIAL ON THE DVD



Build a house in Oblivion



Death needles

You'll have these babies already if you did last month's tutorial – they're arrows that freeze the target rigid for a moment. They make our challenge trivially easy.

Thinking with portals

Indoors and outdoors are two different worlds in *Oblivion*, and each door has to be linked to teleport you to the right one outside. A white box can be placed to specify where you will emerge.

A moment's reflection

The Mirror Shield we've designed renders you immune to spells, and inflicts their effects on the person casting them. This means our Lich foe will repeatedly paralyse himself.

ON THE DISC



TES Construction Set

The Swiss Army knife of *Oblivion* modding – change landscapes, weapons, monsters, quests, AI, textures, sounds, you name it. www.elderscrolls.com/downloads/updates_utilities.htm

3DS Max Exporter

A utility to take models created in 3D Studio Max and transfer them to the Construction Set, for us in-game. www.elderscrolls.com/downloads/updates_patches.htm

NVIDIA DDS

This tool lets you use *Oblivion*'s texture format within 3D Studio Max, so you can skin the custom models you create. developer.nvidia.com/object/3dsmax_dds_plugins.html

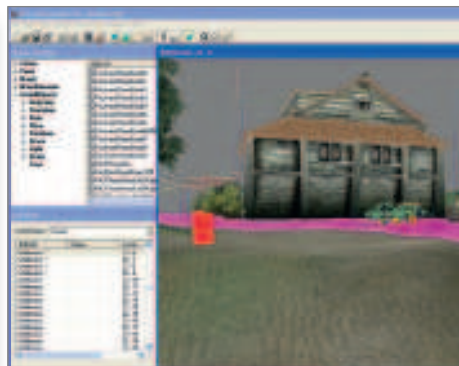
Kumiko Manor

A huge and beautiful estate by Shawn Dworshak, built on a bespoke island near Leyawiin. Puts our creation to shame. www.tessource.net/files/file.php?id=2747



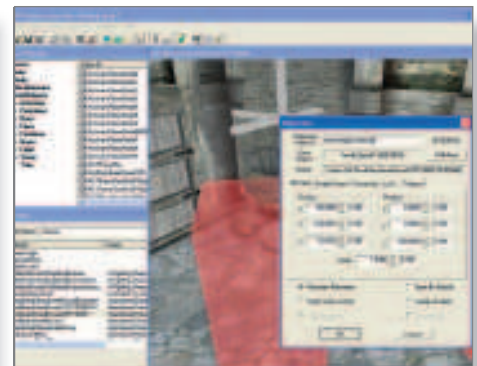
3

Load the cell you want to create your house in. On the island we created, kill the tents on the east coast and build there. Pick a spot, press **[H]** to bring up the landscaping tools, and check **Flatten Vertices**. Now click to flatten a large area. Finally, go to **Edit→Paste Render**.



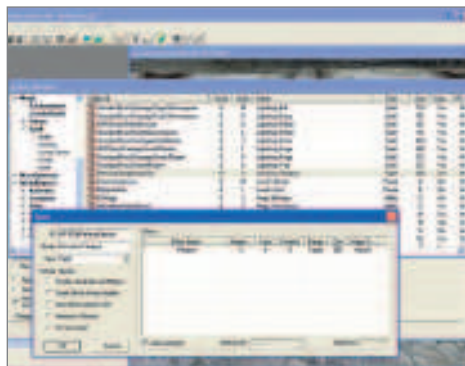
4

Drag your house into position, then hold **[Z]** and drag it to ground level and sink it a little way in. Now double-click the door to bring up its **Properties**, and type in a name. Click the **Teleport** tab, tick the **Teleport** box, and select **AnvilAbandonedHouseCopy** in the **Cell** box.



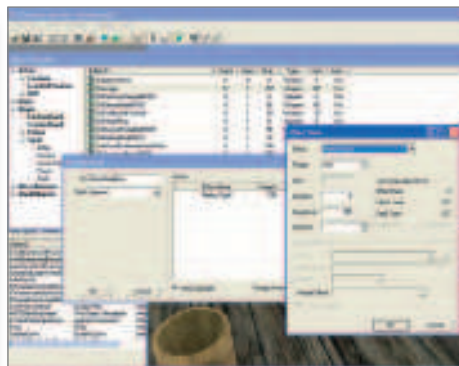
5

Double-click the door to go to the interior, and double-click the door in there. Call it **InterestingDoorInt**, and go to **Teleport**, choosing the appropriate exterior cell in the **Cell** box. Drag the yellow box in the **Render** window into the room, and rotate it to face indoors.



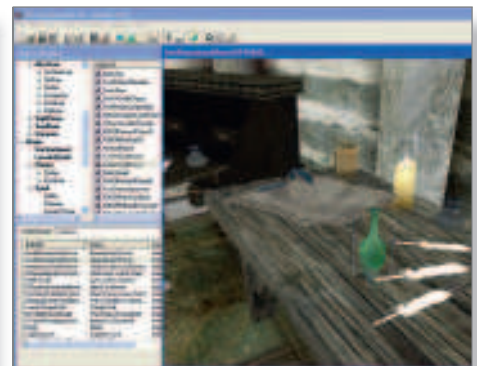
7

Find **Spells** in the **Object** window, and double-click one. Rename it **Paralysis**, remove its current effects and add **Paralysis, 3 seconds, on Target**. Now open up Paralysis's properties, find his **Spells** tab, remove his and drag your new spell into there.



8

Now the antidote. Find **Enchanting** in the **Object** window, right-click and create one called **MirrorEnch** under **Apparel**. Give it **Reflect Spell 100%**. Rename a shield in the **Object** window **Mirror Shield**, and select **MirrorEnch**. Drag it to **Render** and put it on the table upstairs.



9

Lastly, let's be mean. Find a poison in the **Object** window, double-click it and rename it **Lich-B-Gone**. Remove its effects and just give it **Fire Damage** of 50,000 points, with a duration of one second. Click **OK**, and drag **Lich-B-Gone** next to the shield on the table upstairs.

Animate your mates

Make a morphing movie with Karl Foster and *MorphBuster*



Ever since James Cameron's 1991 sci-fi robo-fest *Terminator 2: Judgement Day*, the first movie to feature true computer-generated morphing, special effects boffins have been gaily ganging together disparate images and warping between them. In principle, the technique is simple: Take a start image, mark its key points and map the markers onto an end image. The computer then works out which pixels to shift in order to make a seamless transition between the two over time.

MORPHING MADE EASY

On this issue's disc you'll find SoftBuster's *MorphBuster* (www.softbusters.com), plus a set of portrait shots, so you can try morphing for yourself. Not only does the app offer the means to generate hybrid images through the extraction of individual frames from a sequence, it can also output AVI, GIF and Flash movies from a variety of input sources, including JPEG, TIFF and PNG. We've placed four mugshots on the disc, in mono for clarity of illustration and with shoulders aligned to smooth the transitions, in order to demonstrate how to create a short morphing movie. Here's how easy it is. **PCF**

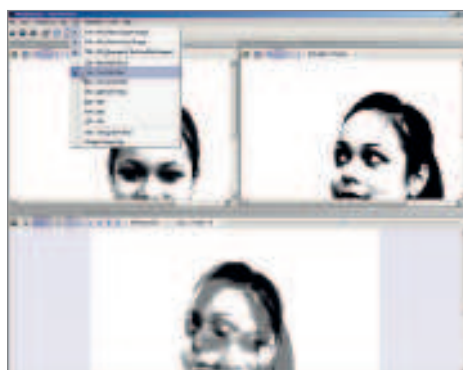
ON THE DISC

MorphBuster

Create convincing morphing movies, animations or sequences of stills in a trice. Softbuster's *MorphBuster* is easy to use and offers a useful instant preview mode. www.softbusters.com

IrfanView

Should the near-legendary industry-standard graphics suite *Photoshop Elements* be beyond your means, try this popular freeware offering when preparing images for *MorphBuster*. www.irfanview.com



1 We decided to author for DVD PAL, so our portraits were resized and aligned in an image editor prior to import of the first two images, via the folder icons of the **Start And End Image** windows. *MorphBuster* supports various image dimensions, plus custom sizes, the settings for which can be established via the **Size** menu.



2 Now to set up some points on the first image. Click along key lines of the portrait with the **Marker** tool to establish points. They're in colour to ease identification, and can be shifted accurately into place by hovering the cursor over them to bring up a hand tool. Note that they appear in the **End Image** view ready for editing.



3 Move the markers in the **End Image** window so that they follow the same relative path as those in the **Start** window. As the hand hovers over a marker, its outline will blink in both windows so you can readily identify which marker is which. If you want to see the morph real time, activate the **Play** button in the **Animation Window**.



4 As the animation builds, you'll likely find that artefacts are generated as the software struggles to marry up the images. Home in on undesirable elements by stepping through the sequence one frame at a time, either by heading for **Animation→Next Frame**, or **Previous Frame**, or by pressing **[Ctrl]+[F]** or **[Ctrl]+[B]**.



5 Once the initial sequence is complete, you can tack on another to continue the movie. Go to **Sequences→Add New** and import the previous sequence's end image into the **Start Image** window, then drop the next shot into the **End Image** window. When the project is exported, the sequences will combine into one long animation.



6 Now to render the lot. Go to **File→Export Whole Animation** and choose the file type and codec to use via the subsequent dialogs. As mentioned, a variety of output types is available, including .exe for standalone movie playback. Remember to save the project file should you need to go back to it for further tweaks.

Store your videos

John Walker finds an easy way to burn video to disc

We're sick and tired of fiddling with 800 different pieces of software for ripping, viewing, sorting, fixing and burning audio and video, so for the sake of argument, we'll assume you are as well. VSO thinks it has an answer to these woes though: *CopyToDVD*. While it doesn't pull all these features into one application, *CopyToDVD* does pull all the applications into one feature, including those sourced from dubious websites that will remove CSS encryption, for example.

FIRE IN THE HOLE

As the world of TV wakes up to the web, more content is being made available for download after broadcast, and increasingly the licenses allow you to back up your collection on disc. So how better to use simple burning software than putting your favourite programming onto a DVD?

For this project we're going to take a favourite sport (OK, only a favourite of John's) from America, and put it onto DVD so we can watch it in the front room with our scared and confused friends. For a small fee (around £2.50), we can download Major League Baseball games from www.mlb.com and burn them to disc. So which better game than the astonishing trouncing of the St Louis Cardinals by the mighty Chicago White Sox back in June, where they won 20 to 5? Exactly.

So first you'll want to convert the file to a DVD burning format. Again, using its smart integrated ways, *CopyToDVD* suggests *ConvertXtoDVD* for the job. It's a case of following the steps on the right. **PCF**

"CopyToDVD makes burning files to DVD or CD much simpler than usual"

Teamwork

Meet the *CopyToDVD* family

DVDSHRINK

Free, and allows you to make a backup of a DVD, bypassing the copy protection that would normally prevent such activities. Of course, copying retail DVDs remains gently illegal, though motions to change this are in the works – distributing said copies is a serious no-go, however.

CONVERTXTODVD

Takes regular avi, wmv or similar video files and converts them to VOB/IFO, ready required for DVD creation. Simple drop-down menus let you choose a DVD title, menu options, and all the other details you'll want the disc to carry. And since CTD fires it up automatically, the disc burning also happens without your having to ask.



It's crisp and shiny, and seems to have adopted Windows XP's native colour scheme. Mmmm – now *that's* bland.

Upgrade

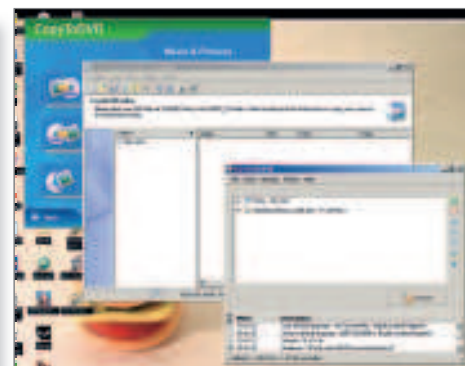
Goodness, we've struck another of our canny deals. There's 20% off any of VSO's products, including today's special feature, *CopyToDVD*, when you put the super-secret code "FUTURE" into the coupon box here: www.vso-software.fr/shop.php.

Time to burn

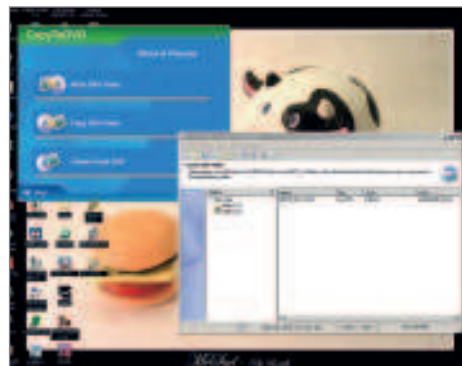
The journey from computer to plastic



1 Once you've got the program installed from your PCF DVD, you'll want to choose the nature of the task you're attempting to complete. Picking some options will prompt the app to see if you'd like to download associated software. We want **Movies & Pictures**.



2 Choosing **Write DVD Video** opens up a box from which you select the video you'd like to burn. We're after that excellent baseball game, but it's a .wmv file at first. *CopyToDVD* fires up *ConvertXtoDVD* automatically, where you can easily set all the DVD details you'd like the file to carry.



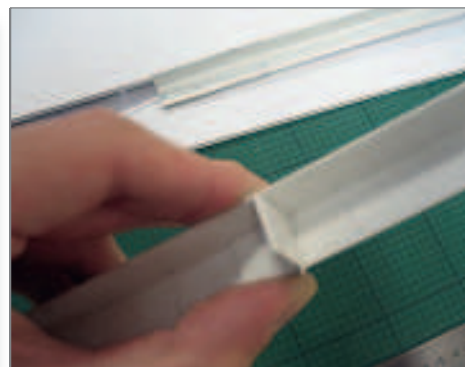
3 Now you drag the resulting VOB/IFO files you've just created in the conversion (or already had from copying another DVD) into the window, and click on the **Write** button, top right. No fiddling, and mercifully no plethora of different windows as it quickly burns the data.



4 And now you can play the disc in your favourite player. Even better, take it far, far from your computer and show it to your friends on their televisions! Spend the next three hours explaining that yes, baseball is interesting, and they just don't get it.

Supersize your screen

James Carey shows you how to get closer to the action by bending light



1 Measure monitor width and height, then cut two matching pieces of foamboard. Label one 'front board' for the lens. Label the other 'back board', to go flush with the monitor face. Cut holes in both boards, one for the lens (leave angles on the corners so you have something to stick the lens to) and one for the monitor screen.

2 Cut four equal lengths of angle strip. Length will vary according to your monitor's dimensions. Cut eight small 'brackets' of angle strip and drill small holes in them for the screws. Screw these brackets to the corners of both boards so that the perpendicular angles run along the tops and bottoms of the boards.

This workshop may look technical and fiddly, but fear not: you'll soon see how, by constructing a simple monitor hood and a lens, you can quadruple the apparent size of your screen, and increase your immersion in any game tenfold. Yes, really.

Believe it or not, you've used a fresnel lens before. Remember the concentrically ringed surface of the overhead projector at school? That's a fresnel lens. What they do is bend light so that the single bulb in that OHP looks like a solid block of rectangular light rather than being brighter in the middle than at the edges.

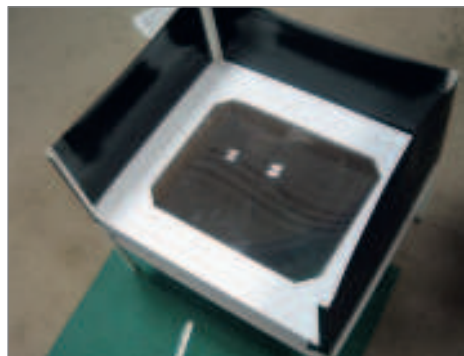
You can use a fresnel lens to enhance your gaming by making the screen size of your monitor appear many times larger than it is. It also has the side-effect of bending the edges of the image, leading to some weird 3D visuals. We obtained our £19 VX-2 VR Fresnel lens from www.icetec-uk.com, which can provide a lens to match your monitor size, and also more detailed instructions on how to put it all together. They can even sell you a pre-cut kit, so all you have to do is bolt it all together. It does, however, work out much cheaper if you buy a lens on its own, and follow the simple instructions here. **PCF**



3 Fix the lens to front board, so the shiny side sticks to the viewer. Make two holes on each piece of angle strip, the first one-third down the length strip (where we'll mount the back board), the second 10cm further down (the actual length will depend where you want the lens focussed). Screw the angle strips to the boards.



4 Fill the sides between the boards with more foamboard if you need to. Slide the construction onto your monitor. We're just testing the focus length before we put the sticky backed plastic hood on. When it's on we won't be able to make any adjustments to the front board bracket holes on the angle strip, so test this now.



5 Cut out a long strip of sticky backed plastic for the nascent fresnel lens' hood. It should be as wide as the distance between the front board and the end of the angle strip. It should also be long enough to wrap around the protruding angle strip on both sides and the top, but not the bottom, of the unit.

6 Run two strips of velcro along the back of the back board at the top and the bottom. Match these with the other side of the Velcro along the face of the monitor at the top and bottom. Attach the construction. Sit with your head under the hood to get the full effect. Enjoy your weirdly 3D gaming!

YOU WILL NEED

- 1 x rectangular fresnel lens. The closer to your monitor's screen dimensions the better.
- 2 x 1m angle strip
- 2 x 2mm thick foamboard (dimensions greater than those of your monitor)
- 8 x 2mm screws
- 1m velcro strip
- 2m roll of black sticky-backed plastic
- 1 x craft knife
- 1 x drill
- 1 x screwdriver
- 1 x long steel rule



Ask Luis...

ALL YOUR PC QUESTIONS ANSWERED

Pub Quiz

Techy posers fit for the local ale house



- 1 **With 8-bit signed binary numerals, which is the highest?**
a) 1000 0000
b) 0111 1111
c) 0000 0001
d) 1111 1111
- 2 **What is a NaN?**
a) A kind of logic gate
b) A kind of transistor junction
c) A kind of number
d) A kind of error
- 3 **Which of these is the correct representation of 0 in bi-quinary coded decimal?**
a) 10-01000
b) 10-00100
c) 10-10000
d) 01-00001
- 4 **Which decimal encoding scheme is most efficient?**
a) Binary coded decimal
b) Chen Ho encoding
c) Densely packed decimal
d) They are all the same thing
- 5 **What is the normalised form of the number -0.00574012?**
a) -5.74012×10^{-3}
b) -0.006
c) 5.74012×10^{-3}
d) it has no normal form

Answers on page 131

Free technical support

Got a problem with your PC? Write to Luis, or better still drop him an email. Assuming you can get your PC to work, that is...
pcfhelp@futurenet.co.uk
PCF Helpline
30 Monmouth Street
Bath, BA1 2BW

Don't panic

Our guru Luis Villazon has now offered up his unique brand of insulting advice for 144 issues of PCF. How gross.

Why won't Samsung's E770 play nice?



FILING SYSTEMS

Jammed phone

Q I have a Samsung E770 phone. Or rather I should say I had one because Orange tell me that it is broken and I should put it in the bin. The problem occurred when I tried to send myself a picture from my PC. The image was downloaded to my PC, before being resized and emailed to an email-to-SMS gateway, so that it could be forwarded to my phone as a picture message. When the message arrived, my phone looked as if it as downloading the image, then after about five seconds it locked up. Is there a way to reformat it completely and download a new firmware or something?

SHELLEY PRITCHARD
Email address withheld

A Doubtless there is, but it won't help. My hunch is that there was something unexpected about that image that is causing the phone to choke. Maybe

it was corrupted by the transfer process in some way or maybe it was in an unrecognized image format. Or perhaps it was just too big, even after resizing. The point is you have this digital chicken bone lodged in your throat and you need to dislodge it before your phone can start. Changing the SIM won't help because the images are stored in the phone's internal memory – SIM cards don't have nearly enough storage. Wiping the internal memory would be a sort of scorched earth solution but my ten-minute scan of the PDF manual online hasn't turned up any such smart bomb and if Orange are telling you to junk the phone, it's likely that they don't know of one either. Simply downloading a fresh copy of the firmware without wiping the memory first is pointless. The firmware you already have is working fine; it's what is in the data area of the memory that is the problem. Most firmware update programs are designed to allow you to replace the OS without affecting your own data

which is precisely the opposite of what you want to do.

I think your best hope lies with the five-second window after the phone starts and before it crashes. If you can access the message inbox during this interval and delete the offending MMS then your phone will probably recover. It won't be easy; five seconds isn't long and you'll need to practice a few times to hit the keys in the right order fast enough. But I think it can be done. It can't be any harder than casting Shadow Word: Pain, Shield, Renew and Fear while that undead rogue is trying to stun-lock you in *World of Warcraft*, anyway.

MOTHERBOARDS USB reboots

Q I have a 2.8GHz Pentium 4 and 1GB of RAM on an Asus P4 S800 mobo. I use a USB 2.0 PCI card for my computer as my motherboard's USB ports do not work. My PC recently started to reboot when I connect a USB device, or after I am done

using the device, and XP says the PC recovered from an error and shows these files:

C:\DOCUME~1\Kibria\
LOCALS~1\Temp\WERf610.dir00\
Mini121005-03.dmp

C:\DOCUME~1\Kibria\
LOCALS~1\Temp\WERf610.dir00\
sysdata.xml

This also happens sometimes when I try to shut down the PC. Can you tell me if this is a hardware or a software problem as Windows does not give me any clues?

MOHAMMED KIBRIA
kibz27@gmail.com

A My spidey sense says hardware. Why do your motherboard USB ports not work? Did they work previously and then failed or have you needed a separate PCI controller from day one? Either way, it's fishy. This could well be an IRQ conflict. You can test this by moving the card to a different slot, which will force the PCI manager to assign a different IRQ to the controller. Actually, provided that you don't need the slot for anything else, the test might also work as a cure. If the reboots disappear in a different slot, you can just leave the card there and be done. If it doesn't fix it, I'd switch motherboard. For one whose built-in USB ports do in fact work, ideally.

SECURITY

Compression confusion

Q In PCF182, there was a tip about password-protecting a folder in XP but I can't get your solution to work! The folder readily

compresses, and the name appears blue in Explorer, but using File→Explore then File, did not give the Add a password option. So, what am I doing wrong – I'm sure it can't be you!

JOHN KENNETT
john.kennett@blueyonder.co.uk

A A wise assumption, not least because flattery roughly trebles your chances of seeing an answer in print. However, I have a confession to make: I can't see the Add a password option either. It was obviously there last year when I wrote that tip, because I always, always step through these things for myself as I write them, to make sure I get the exact wording and capitalisation on the menus correct. But obviously, it isn't there now. If someone could hit the lights, I'll have the first slide please.

Slide 1: Here we see a compressed folder in Windows XP with the distinctive blue font for the folder name. Selecting this and clicking the File menu in Explorer reveals the Add password option.

Slide 2: Here is a press release for Microsoft's My Private Folder feature that would allow password protection without having to compress first. It was, in effect, a pre-compressed folder and was available as a free download, provided that you were signed up to Windows Genuine Advantage.

Slide 3: This is the storm of protest about the problems of allowing dumb users access to this in corporate environments. Microsoft withdrew My Private Folders shortly afterwards.

Slide 4: This is the same compressed folder we saw in Slide 1

but now the Add password option is strangely missing.

I'm not normally given to paranoid speculation [Are you sure about that? – Ed] but I'm wondering if MS has hot-fixed XP through Windows Update to cripple password protection on compressed folders. On the other hand, I'm writing this on the hottest day of the year, so it's possible my brain has just melted and a more rational explanation is staring me in the face. On this topic and this topic only, I will happily await comments and corrections from those with more efficient cerebral cooling systems. Until then I think it's best that we all head back to www.pc-magic.com.

OS INSTALLATION

Flash boot

Q Talking about using a flash drive to speed up the PC, I was wondering is it possible to use a flash drive (4GB Buffalo Firestix) as your primary bootable drive (c:) and install Windows in it, completely skipping the hard disk? I think if it's possible to do then it should speed up laptop speed, if not on XP then any chance of having such option on Vista? What are your thoughts?

USMAN HASHMI
usmanfarooqhashmi@hotmail.com

A There are some, fairly specialised, reasons for wanting to put a bootable OS on a USB key but performance isn't one of them. A modern internal hard disk generally manages about 50MB/s transfer rates on average. An external USB 2.0 disk tops out around 40MB/s and a flash drive perhaps 30MB/s. The differences aren't enormous – it's fractions of a second, even when you are loading a complete OS – but the fact remains that moving from hard disk to flash RAM moves your transfer bandwidth in the wrong direction. And that's just for the initial load. If you want to eliminate the hard disk completely, that means putting temporary files and virtual memory on the flash drive too. This type of storage is frequently overwritten and erased and if there is one thing that flash RAM does badly, it is erasing. Flash devices are tens of times slower to erase than disks.

Still, the Linux community has been doing it for years, just to show that they can, so there is no reason not to have a go. A bootable OS on a USB key is a useful troubleshooting tool if nothing else. There are quite

FAQ

RFID viruses are on their way...



Tin hats on everyone – there are more viruses to fight.

What is RFID? Radio-Frequency Identification. RFID tags are used on some goods and swipe cards and injected into your dog's neck to allow remote reading of a short ID sequence.

What is an RFID virus?

Professor Andrew Tennenbaum of Vrije Universiteit in Amsterdam has done some research to see if RFID tags could be used to infect the reading software. His conclusion is that they could, even though most RFID tags carry less than 127 bytes.

But how could they spread?

Almost all RFID tags are read-only, so even if they could be used to inject a virus into a PC, it couldn't reinfect other tags. At that point it would be just a regular worm or virus.

What could an RFID virus do?

The worst-case scenario would be some kind of SQL injection attack, whereby a string in the tag contains SQL commands that get executed by the database to destroy data.

Could they do that? Probably not. RFID tags don't tend to contain strings – they are just tightly formatted numeric identifiers, but Tennenbaum did discover that many reader apps place too much trust in the validity of the tags.

Should I worry? Viruses are more of a mild nuisance than a global threat. It's still safe to get Tibbles chipped, then.

Read more at tinyurl.com/s6hra

Bedside table

This month, Luis is reading...

Windows Vista Unveiled

Author Paul McFedries Publisher SAMS Price £17.99
ISBN 0-672-32893-3

I don't normally like this sort of book – a guide to a product that doesn't even exist yet? Who has time to read that? Certainly, if you intend to upgrade as soon as Vista ships, or if you will be buying a new machine with it preinstalled, you don't need this book. Most of it covers things that you will easily figure out for yourself when the time comes. But if you are wondering whether to upgrade, and especially if you are considering trying the beta version, then this book may be a more productive use of your time. And it won't crash your computer.



good instructions for an XP version at www.weethet.nl/english/hardware_bootfromusbstick.php.

OS TWEAKS

Transparent icons

Q My desktop icons (My Computer et al) have coloured backgrounds and they can be modified by using the Display Properties to pick the colour you want them to be. But I don't want them to have a background, I want them to be transparent. Can you help me?

STEFAN VENTER
galaxy@lantic.net

A Yes, no need to wait for Vista for this one. Right-click **My Computer** and choose **Properties**. Switch to the **Advanced** tab and click the **Settings**

button in the **Performance** section. Scroll down the list and tick the "Use drop shadows for icon labels on the desktop" box. Instead of a coloured background, you'll get a discrete black drop shadow. You still can't choose the colour of the text but white with a black shadow is legible on most backgrounds.

OS INSTALLATION

Dual difficulties

Q Is it possible to create a dual boot on a RAID 0 (2 x SATA) hard disk setup? Is there anything in particular to consider?

PAUL NOBLETT
paulnoble@hotm.com

A Using RAID 0 to improve disk performance is like using compression to

improve capacity. It works, but at the cost of reducing reliability. Now, there have been a few occasions when I have wished that my disk was faster but I have never thought "Gee, I've got plenty of spare reliability, I guess I can sacrifice some." RAID 0 therefore, robs Peter to pay Paul when Peter is already considerably richer than Paul.

However, I can tell from the way you are impatiently shouting "Get on with it!" at me, that you are in no mood to listen to me telling you how to live your life. So let us proceed. RAID 0 and dual booting should theoretically coexist quite happily – they are essentially unrelated technologies operating at quite different levels of hardware abstraction. In apparent defiance of this though, there are problems on some NFORCE 4 boards that will cause your installation of XP 64 to reboot just after Win32 loads. This is because ntldr and ntddetect don't get copied onto the RAIDed disk properly. You can patch this after the install by booting into the other OS and then explicitly copying ntldr and

long since let the site lapse and the domain has become deregistered and returned to the common pool. There are fragments of it preserved in fossilised amber over at www.archive.org but since the site was last updated in September 2000, I doubt that the program you are looking for is indexed. While Colin's site was up, it was a hugely useful resource (at least for me) and if anyone has anything similar that covers the recent discs, I will be only too happy to place the oxygen mask of publicity over their faces.

NETWORKING

Cable doctrine

Q I just read your comments on using a crossover cable as a mini LAN.

Crossover cables are very useful, regardless of your comments. Not in your environment possibly. But they are a very useful tool to many, myself included, and yes, I have an 80GB USB device, as well as a hub. I don't want to take my hub everywhere my laptop goes. And copying data between two

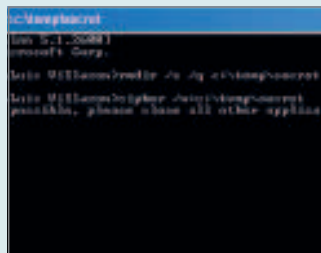
Rigging demolition charges

Make yourself a self-destruct button



1 Open up! Police!
We've all got secrets, nothing wrong with that. You don't have to be Osama Bin Laden to appreciate the value of securely deleting your data when the need arises. Unfortunately the Recycle Bin just isn't up to the job. Even when 'emptied' the deleted files can be recovered by any fool with fifty dollars worth of shareware.

2 Scramble first
The first step is to make sure that your data is secure before you delete it. For that, you need XP Pro because XP Home doesn't have Encrypting File System. Right-click the folder and choose **Properties→Advanced→Encrypt contents to secure data**. Spies will need your login password to access the folder now.



3 Delete and wipe
To purge the folder completely, open a Command prompt and type **rmdir /s /q c:\temp\secret** (or whatever the folder name is). This only removes the folder from the directory entry table, not the actual data. To overwrite that, type **cipher /w:c:\temp\secret**. Not even God can get those files back now.

4 Dead man's switch
To create a panic button, put these commands in a file called **panic.bat**. Double-clicking it will erase your secrets. If you're truly paranoid, why not put this file in **Documents and Settings\<username>\Start Menu\Programs\Startup**? This will erase everything in the folder unless you hold down [Shift] when XP starts.

"I've never thought 'Gee, I've got plenty of spare PC reliability, I guess I can sacrifice some'"

ntddetect.com from the XP64 installation CD in the i386\ folder, to the primary partition, ie. C:\. Then all you have to do is add this to your boot.ini file:

multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Microsoft Windows XP Professional x64 Edition" /noexecute=optin /fastdetect

Change the partition number as necessary to point to the location of Windows XP.

THE INTERWEB

Missing site

Q The URL www.pcfdiscs.co.uk is given in PCF's tips and tricks section, but my search always draws a blank. I don't understand why, as I'm using MSN Search.

PAUL
paulnoble@hotm.com

A You again? That tip appeared in PCF109, almost seven years ago. Not surprisingly, Colin Higgs, who originally created the site to track the contents of our cover discs, has

computers via USB key can be tedious. If you are going to take the mantle of an expert, either be more generous with those who ask questions, or expect other experts to question your comments. I mean, how would you recommend connecting two computers? Do you really suggest buying a hub and cables instead of just one cable? Which will fit in the laptop bag easier I wonder, and now I need another power socket. Or maybe getting down on my hands and knees every time I wish to copy a file...! Now that is madness, pure raving loony madness.

Your comments on using a static IP were however useful. I suggest you stick to those type of comments unless you favour alienating more readers.

COLIN
c0lin@hotmail.com

A Ha! I don't need your love. My mission is to present the world through the refracting prism of My Own Personal Opinion. This lens splits all existence into Right and Wrong, but only from my point of view. If you

want to network machines using crossover cables, laplink serial leads or badly shielded SCART cables you don't need my permission. Knock yourself out.

If, on the other hand, you want my opinion, it is this: Ad hoc networks are a terrible way to transfer data. The ethernet protocol may have a theoretical bandwidth of 100Mbps/s but that's only the speed down the wire. Add in the time taken to set up the connection, fiddle with settings, unplug, double-check the cable, reconnect and fiddle some more; suddenly your throughput has fallen right off. If I need to transfer a few files between any two random machines, I will use an SD card, a USB card or a CD-RW disc, in that order of preference. If I need a *continuous* connection I'll establish a proper network, wireless or wired. A "proper" network is defined as one in which all machines use at least Win2K (or OS X for Macs), all machines use built-in transceivers or ones made by the same manufacturer as the rest of the network infrastructure and there are no peer-to-peer connections. I spend about three hours a year administering my own LAN. Those who would like to devote more time to theirs should feel to test out these rules for themselves.

COOLING Fan noise

I have an old Compaq system that runs on an AMD Athlon XP 2200 chip. The fan is very noisy; ranging anywhere from 45-65 decibels, usually on the higher end of the scale. The loudness of the fan is directly proportional to the CPU temp. Low fan noise is usually from 55 to 74°C and high fan noise from 74 to 100°C (time for an automatic

shutdown). Of course this makes sense, the higher the temp the more air flow is needed to cool the CPU. It seems to help when I prop the laptop creating a larger heat dissipation surface, but only by 3-5°C. What can I do reduce either the fan noise or CPU temp without sacrificing multitasking?

ANGRYHOMER

angryhomer17@gmail.com

A If your computer's processor is regularly running at over 74°C then you don't have sufficient cooling. AMD will tell you that anything up to 85°C is perfectly safe, but 'safe' has always struck me as a rather low threshold to aim for. Camping in a muddy field in Wales is safe. Eating Quorn is safe. Grinding timbermaw reputation in *World of Warcraft* is safe. None of these are things that I would want to do for any length of time. Safe and optimal are not the same thing.

Starting with the easy stuff, take the case off and blow all the dust that's collected in there out of the way. Move the graphics card as far away from the CPU as you can and keep all the other expansion cards away from the graphics card, if you can. Use cable, ties, elastic bands or freezer bag ties to route cables away from the middle of the case. This probably won't be enough by itself so we move next to the things that cost money. If you have a Gucci Perspex case, replace it with a metal one that actually conducts heat. Mount a fan on the front of the case and possibly another on the back if the only one you have at the moment is the PSU fan. Make sure that the front fan sucks air into the case and the rear ones blow. You want a consistent draught running through the case

and the air coming in from the front will bring much less dust with it.

HARD DISKS

Confusing cable conundrum

Q What is 80 cable? On my first boot screen my PC tells me there is no 80 cable on my CD-RW drive. It causes no obvious problems, except it takes a few more seconds to load.

CHRIS

andrew.ball@absamail.co.za

A 80 cable, more properly 80-conductor cable, is what most people think of as IDE cable. This is to distinguish it from the older 40-wire stuff that no one uses any more. No one except, it would seem, you. 80-conductor cable was designed to be backwardly compatible with the older cables so there are still only 40 pins on the connectors at each end. That's why it is called 80-conductor, not 80-pin. The extra 40 wires are all connected to the earth pin and they alternate with the original 40 wires that actually carry data and voltage. Their purpose is to absorb signal leakage, thereby reducing cross-talk. Below 16Mbit/s, this isn't necessary, but for Ultra DMA modes 0, 1 and 2 (ATA 16, 25 and 33) it will improve data reliability. Above mode 2, 80-conductor cable is actually required. Motherboards can sense which cable you are using because pin 34 is grounded on 80-conductor cable but not on 40-conductor. Your BIOS has spotted this and is warning you that you will be restricted to ATA33 speeds on your CD drive. Whether you care about this will depend on how fast your drive is and how much you use it, but an 80-conductor cable shouldn't cost more than a few pounds. **PCF**

VIRUS OF THE MONTH

Niggling nasties shown the door



It's not who you know, it's whether you shake their hand.

Name Zlob.QJ

Aliases Trojan/Zlob.QJ

Type Trojan

Infects Windows 2003/

XP/2000/NT/ME/98/95

Number of outbreaks <100

Virulence Moderate

Lethality Low

First detected 30/5/2006

Symptoms

Zlob.qj is normally presented as an installer for 'Media-Codec'. If you are mad enough to download and install something so vague, Zlob will write some files to the System folder and a dummy uninstall file. The files are not contained within the Trojan itself; they are downloaded on demand from a remote location using your net connection. This allows it to update itself over time so the actual payload could be almost anything. At the moment, there are Zlob variants that steal data, delete files, download malware and modify files.

Prevention

If you only download files from reputable sites, you will reduce your risk of infection to virtually nil. If you must download junk from the dark alleys of the web's red light district, run a virus scanner on the file before you execute it.

Cure

You can delete the files and patch the registry, but it is much simpler to use one of the Zlob removal utilities, found at www.spywareremove.com

More info

www.sophos.com/security/analyses/trojzlobqj.html



Words Luis Villazon Pictures Mark Mitchell



Cinema goes 3D

James Morris explains how digital cinemas will enter the third dimension in the near future

Now that high-definition TV broadcasting is settling in, and the associated optical formats are very nearly upon us, cinemas are faced with yet another onslaught. The arrival of TV slashed attendances, so cinemas came up with innovations like widescreen Cinemascope to make going to the movies special again. Now, to combat the fact that a big-screen HDTV or projector isn't far off what you experience at a multiplex, the movie industry has been looking for something that you just can't do at home. And what it's come up with seems like a blast from the past: 3D stereo vision.

But don't conjure up the short-lived 1950s fad of wearing colourful glasses whilst watching *The Creature from the Black Lagoon*. The new 3D cinema revolution is already showing signs of much more mainstream appeal. With *Chicken Little* making around 10% of its revenue from 3D presentations, and freakish Tom Hanks CGI 'toon *Polar Express* around 25%, the new era could be much more than just an ephemeral novelty attraction. Cinema chains are seeing this as a real money-spinner, as they can charge extra for the 3D screening over regular presentation.

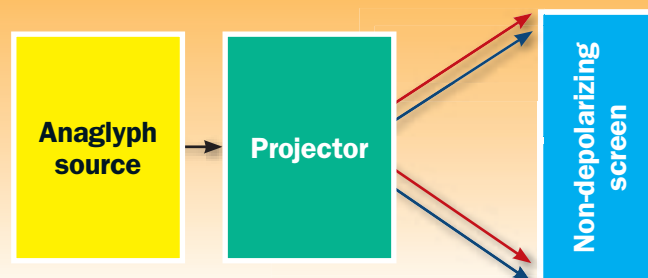
3D CINEMA MADE EASIER

The big difference between now and the 1950s will hardly come as a surprise to a *PCFormat* reader – digital technology. Digital cinemas, or 'd-cinemas', are rolling out around the globe, and this is making the addition of 3D to the portfolio somewhat easier than before. The US had 336 of them at the beginning of 2006, with the total expected to increase to at least 1,000 by the end of the year. Here in the UK, we only have 50 d-cinema screens as of February 2006. But Arts Alliance Media, which is championing digital film distribution in Europe, has pledged to raise the number to 240 by Spring 2007.

In the 1950s, an 'anaglyph' system was used to create the 3D effect, which virtually everyone will be familiar with. This operates by colourising each side of the stereo image and then superimposing them on the same piece of film. Any cinema can then project the results, as all the viewers need are glasses with blue and red filters to separate the images going to each eye. However, this method has significant problems with ghosting and 'crosstalk', where images meant for one eye are partially visible to the other eye. The end result is a poor experience for the viewer, which is part of the reason why the idea never really went beyond its initial novelty.

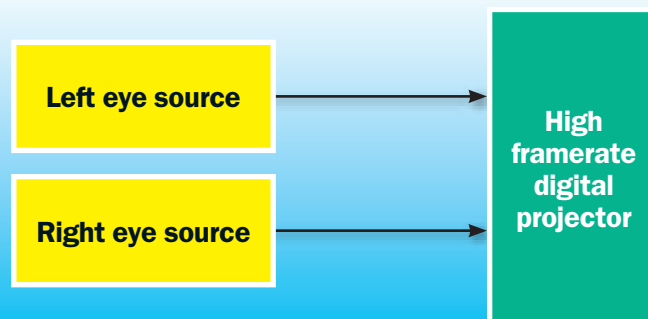
Better results can be had using polarisation. Later systems used linear polarisation where the light intended for one eye is rotated at 90 degrees to that for the other. This isn't very tolerant of head tilting, although it does

ANAGLYPH PROJECTION



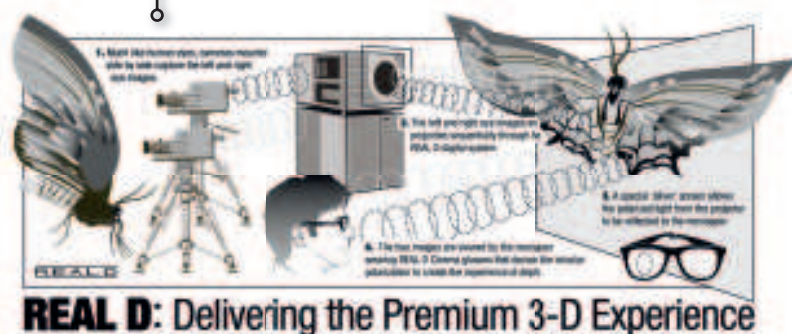
The anaglyph method of 3D cinema projection colourises the two different eye-views differently, and projects them in the same frame. Filter glasses are used to send the images to each eye.

CIRCULAR POLARISATION

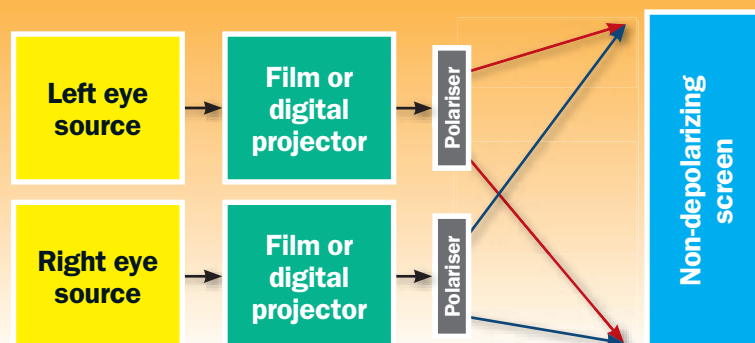




The Real D shuttered switching polarizer attaches to the front of a digital projector and is synchronised to the unit's refresh rate.



LINEAR POLARISATION



Although the passive linear polarisation system gives superior results than the anaglyph method, two projectors are required to output the differently polarised images for each eye.



Using a shuttered switching polariser, only one high frame-rate projector is required. This runs twice as fast as normal with the polariser outputting alternate frames with alternate polarisations.

TOTALLY DIGITAL

Let's keep this technology in perspective, shall we? Not every movie you go to see at the cinema is suddenly going to be produced in 3D, even when most cinemas are d-cinemas. But a significant number will be. David Camera has pledged to shoot all his future movies for 3D presentation. New Line's *Journey to the Centre of the Earth* and Robert Zemeckis' *Beowulf* are also planned with 3D d-cinemas in mind. Peter Jackson is even considering re-releasing his epics *Lord of the Rings* and *King Kong* in the format. Perhaps most tellingly of all, George Lucas has similar ideas for the 30th anniversary of *Star Wars* in 2007. So just when it looked like a Blu-ray or HD-DVD drive and 1080p high definition projector might make movie theatres obsolete, perhaps digital technology is going to give us a reason to brave real life again, Butterkist in hand, and return to the multiplex in our droves. **PCF**

NEXT MONTH
HYBRID HARD DRIVES
WE EXPLORE THE FUTURE OF THE
HYBRID HARD DISK, WHERE FLASH
RAM & SPINNING PLATTER MEET

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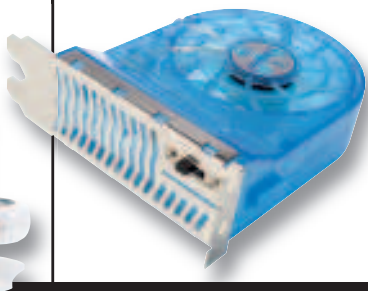
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Restart

YESTERDAY'S GAMES TODAY

Crimson Skies

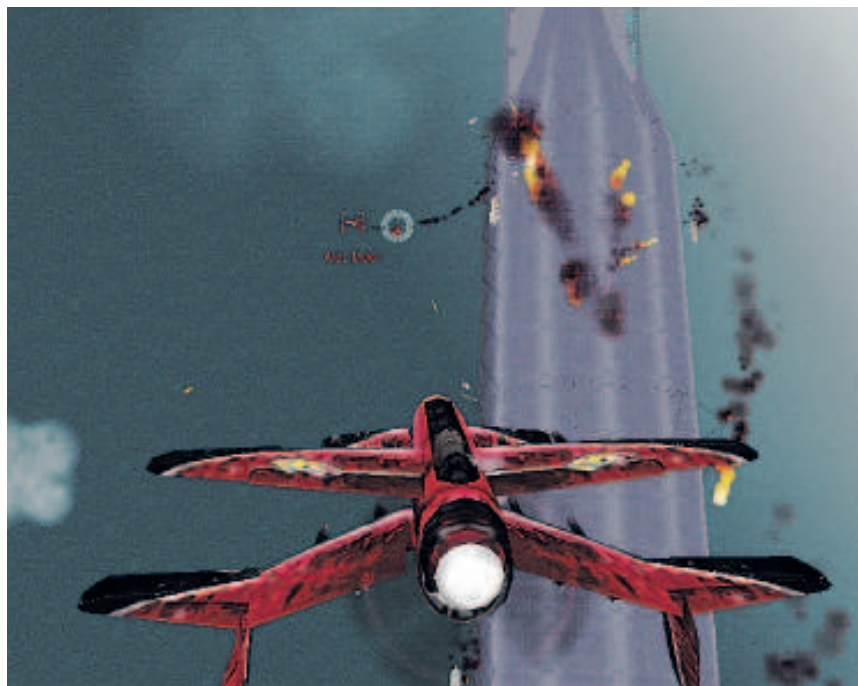
REDISCOVER Piracy and sky-high combat...

Musing over the latest flight peripheral from Saitek, the Cyborg Evo Pro, this month, we found time to lament the lost age of joysticks. It seemed, to our tired eyes, not too long ago that every house with a PC also had a flight-grade waggler. Now, usurped by the ubiquitous analogue control pad, there's a large space both on our desks and in our hearts.

It's with this in mind we decided to dust off the old Microsoft Sidewinder and match it up against the exposed springs and clicky buttons of Saitek's offering. We needed a flight sim that

would be all about rattling machine guns and daring adventures, and *Crimson Skies* was perfect, not least because we recently found it on the Fair Game budget label for £2.97.

Soon we were soaring, peppering each other with .50 cal and avoiding the giant airships that preside over the dogfights. The Cyborg stood up well, but the Sidewinder reminded us of a time when joysticks weren't a niche product. It was Microsoft's thundering force feedback and chunky design that meant Alec 'Mongoose' Meer won over Mike 'Air Biscuit' Channell in the final sortie.



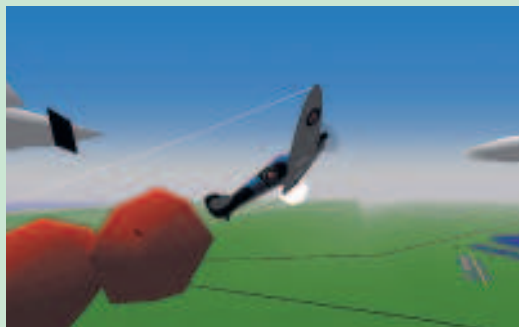
Yarr! Hoist the main aileron. Make 'em walk the wing. Oh never mind...

FALSE PROPHETS

"WE'VE PUT OUR PLANS TO BUY DVD PLAYERS ON HOLD UNTIL X-ENABLED MODELS COME ON SALE" VM LABS' ILL-FATED PROJECT X (LATER NUON) IN PCF 88 FAILED TO CHANGE THE WAY WE WATCH DVDS, WITH ONLY FOUR NUON-ENABLED MOVIES EVER BEING RELEASED.

Flying triangles

Looking at the quasi-vector graphics of early *Flight Simulator* instalments in our *FSX* preview (on p46) and *F/A-18 Hornet* (on p139) made us thirsty for some clean lines and mono-blue skies. So how about the ultra old-school YS flight sim? It's got loads of different aircraft, from Spitfires to Concorde, and even includes some LAN multiplayer goings-on. What's surprising is the level of detail in the mechanics, despite its amateurish looks.



Get more info at
www.ysflight.com

LogiNoki LCD mouse

REINVENT Your top-end precision pointing instrument with an old moby

The clever chaps over at MetkuMods (metku.net)

have made this very clean, functional mouse/LCD mod combining a Logitech G5 Laser mouse and an LCD screen from an old Nokia mobile phone. Now, this mouse is the pointer of choice for many in the PCF office so hacking one to bits for dubious benefit is a brave move but credit to Metku, this is one of the cleanest builds we've seen. The LCD's SPI input is controlled by a rewired parallel port and can display game stats, still images, webpages and even full-on video. It's not exactly perfect for keeping one eye on the BBC's online cricket coverage while playing *Call of Juarez* though, you'll get a framerate of about 1FPS! Did we mention that the build quality is very, very nice?

The mouse's bevelled edges and electric blue finish make this more than a hack-job.



"SIM CITY STARTED THE GOD GENRE I THINK. THE IDEAS WE WORKED ON IN RAILROAD TYCOON MADE US BELIEVE WE COULD BUILD A WHOLE WORLD INTO A GAME"

Sid Meier, creator, PC games as we know them



REMEMBER...

We said *Constructor* might be *too deep* for some people. Cast your mind back to *Sim City*, with guns

This is a game that enabled you to do all the naughty things you wanted to do in *SimCity 2000* but couldn't: start a block war, for example. This sprawling world-builder cum RTS tried to shoehorn elements from a host of genres into one eminently British game. Somehow it pulled off the impossible and scored a whopping 90%. It's odd, then, that few of the current PCF staffers can remember the game at all.

Everything was painstakingly detailed, almost to the game's detriment. For example, you couldn't just build a factory if your city of workers desired a place to earn a crust. Instead you had to have blueprints, materials, approval from the council – you see where we're going with this. Still, it was way ahead of its time. Look at the things *City Life* tried to do earlier this year with different classes of citizen disliking each other, and you'll see plenty of *Constructor's* influence. It was an anomaly, a genuinely funny game that demanded a massive amount of micro-managerial skill coupled with a thirst for bloody action. Perhaps that's why it's faded from people's memories so much despite the score. It was just too odd.

ALSO OUT THEN...



F/A-18 HORNET 3.0

Plenty of realism but the graphics weren't up to the standards of the day for this sim from Empire. Perhaps this was the first hint that combat flight sims could no longer get away with a two-colour desert-and-sky binary world in the age of MSFS and F-22 Lightning 2.

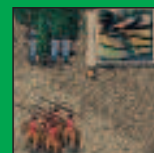
SCORE
PCF 68%



SHADOW OF THE EMPIRE

Star Wars games have hit the skids in recent years. *LEGO Star Wars* may be turning that around, but it wasn't always so. Take *SoE* here. This is the game that totally and utterly nailed the Battle of Hoth. The rest of the game was a distinct letdown from that epic start, though.

SCORE
PCF 81%



THE GREAT BATTLE OF ALEXANDER

Before *Total War* anything that resembled a tabletop war game was bound to cause division among reviewers. Historically accurate battles they may have been, but there were better ways to sate your Armchair General – even in 1997.

SCORE
PCF 64%

Looking Back

THE CREATOR'S CRITIQUE



Fact File Boss man

Subject Sid Meier
Job title Developer
Developer Firaxis
Reviewed PCF31, 86%



Gradually conquering entire landmasses rocks our world.



Oh, the agony of choice: do we improve trade, strengthen defences, or prepare for conflict?

Civilization

Quintin Smith **dusts off a hallowed antiquity to see what the ancients did for us**

To anyone who wasn't around at the time, it's hard to explain exactly how big a milestone *Civilization* was. A combination of god game and strategy game when at the time both genres were just hatching out of the brains of developers, its success changed the PC's status as a gaming machine.

Arguably the biggest indication of *Civilization*'s quality is that its sequels and clones are still in production and enjoyed today, with even a board game based on the series released. What people might not be aware of is that an English board game designer called Francis Tresham released notably familiar game called *Civilization* a few years before Sid Meier's masterpiece, but Meier waves away the cynics.

COLONISE THIS

"His games were an inspiration in kind of a strange way. I didn't actually play the *Civilization* board game before we designed *Civilization*. We played 1828, an English board game,



The tech tree that begat a million imitators.

Bruce Shelley did an America version and that was part of the inspiration for *Railroad Tycoon*. A lot of the ideas for *RT* migrated over to the original *Civilization* computer game. Having a big map and creating something. Having economic stuff and having different systems working together. So with *Civilization* we thought 'We're gonna have cities! And we're gonna have military! And politics! And economics! Put it all in there.'

Expanding on the innovation of *Railroad Tycoon* might seem surprising as foundations go but it doesn't make the project any less ambitious. "*Sim City* kind of started the god genre, I think. But the ideas we worked on in *RT* made us feel we could make a game even bigger than *Sim City*, a whole world, you know?" Bold words, but Meier explains that development went smoothly. "The only kind of glitch or problem was that we almost got off on the wrong foot, because the first prototype we did was actually a real-time game where you would zone areas, and this had a lot of watching and not much actual doing. Then we had the brilliant idea of making a turn-based game where you actually made very concrete decisions of moving this guy there, and telling him to build the city in a specific location. You felt you were totally involved with the game and you were involved with these decisions."

It's hard to imagine these radical changes occurring in the structure of such a cornerstone of PC gaming, and it makes you wonder how things could have turned out differently, and what the impact of that might have been. Meier goes

on: "I actually had the idea that it'd be about the rise and fall of *Civilization*. The idea that wouldn't it be even more exciting for you to come back from the brink of failure and eventually win that victory." And why didn't this end up being a feature? "We found everybody stopped playing when they took a fall. They'd just start over again. So we ended up with more of a march to the end where there are little ups and downs, but you rarely got to the point where there was only a glimmer of hope. So *that* game hasn't been created yet, where you get that sense of having come back from the absolute brink of defeat to victory. I think that'd be really satisfying but with load and save it's just like 'Oh, man. I'm gonna start over again.' "

TERRITORIAL ARMIES

Without a template to work from, it was picking through these ideas that led Meier and his team to discover what worked. "What made the game really replayable was the way you could have these different strategies, how you could go economic or military and how all these systems worked together with a random map," explains Meier. "It just seemed like every game felt unique so you knew that if you played you'd have a brand new story. That was the inspiration to start playing games. Wanting to read that last page." But right up to the game's release no one could be sure if it'd be accepted. "I think we knew it was fun but in those days there was no such thing as strategy games. There were war games with hexes and lots of counters, that were really complicated. Bringing out something like this, we didn't know what to expect. We thought it was a good game that would do well, but it wasn't in a popular genre. So it wasn't a sure thing."

This simplification of previously uninviting genres is something that's worked well for Meier. "I think even with *Pirates!* we wanted to make an

Developer Diary

SimBin's Diego Santori leaps to the defence of much-maligned simulations



The word 'simulation' has caused divisions in the gaming world, and the tension is often caused by how players and devs understand and use the term in relation to their games.

Can you be a fan of simulation games if you play them with all the aids switched on? Most hardcore simmers would say no.

Well the truth is, of course you can. In fact I think that this bottom rung is where we all started and got our passion for racing games, flight simulators and so on. We have just forgotten this and are trying to force other players to be as hardcore as we think we are. What developers tend to overlook is the fact that if we are not receptive to new players, even those who play the sim with all the assistance switched on, we risk limiting the growth of the genre as a whole.

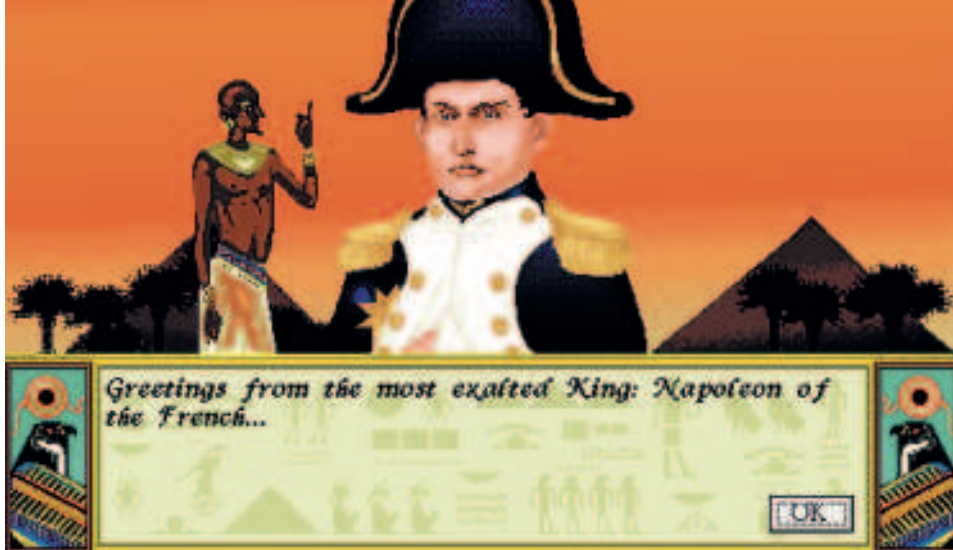
A common mistake is to assume that the word 'simulation' automatically means 'difficult'. But, as SimBin discovered with *GTR*, it is also common for sim racers to want things as hard as possible, so there's a clear distinction between those who are able to master the game and those that are not. A hardcore sim offers some degree of satisfaction for those who can tame it.

I believe that if developers attempt to create racing simulations that are intuitive and logical, rather than simply difficult, the line between the good and the really good will be limited to lap times rather than time spent wrestling with the controls. It would mean the game remains accessible to anyone with a heart for racing and this in turn should also mean that once your name is at the top of a leaderboard, it will be one of tens of thousands rather than one of a few hundred hardcore fanatics.

There will and should be players playing our games using a keyboard or joypad and those that are playing the games using \$30,000 steering wheels. What should unite them is passion for racing and the willingness to share this with other players.

The perfect simulation is easy and intuitive to learn, but hard and rewarding to master, and should be rewarding in the long-term. See you all on the virtual race tracks of the world.

Diego Santori is a Game Designer for SimBin, creator of *GTR2* (p90). www.simbin.com.



Despotic military genius moved in next door? Ramp up your army units and start practising your 'diplomacy'.



The beauty of *Civ* was the fact that the player was regularly rewarded with minor discoveries and new tech.

RPG that wasn't about examining every object in the room and examining hit points and charisma points. We tried to figure out what was the most fun, what was the essence of a topic and do the best job we can with that. I mean with *Civilization* you've got to simplify, you know?" Meier laughs.

"It's pretty much a given when you approach that topic. So we try to boil it right down to just the essential decisions."

There's always room for improvement, though, and Meier seems to appreciate the chance to continue working on the series, which he does carefully, heeding over-complication. "In simplifying existing systems in *Civ 4* we were able to add new systems like religion and resources. We're not reducing this

game. What's constant is how much stuff the player can absorb. But we can make the game interesting in new ways." And there's the kernel of Meier's ability as a designer – not just a dedication to making things interesting in new ways, but the knowledge of how to do it.

"I did play the *Civilization* board game part way through the development but I'm kind of glad I didn't play it before. It had a lot of things that worked well on a board game with more

players. But we were able to focus on the 'You are the king. It's good to be king' kind of experience which I think people enjoyed in *Civilization*." And thanks to that, both us and *Civ* can know it's good to be King. **PCF**

"We're gonna have cities, the military, economics – put it all in there"

Sid's success stories

The secrets of popular game design

What *Civilization*, *Pirates!* and *railroads* all have in common, aside from being Sid Meier's most popular games, is that they're strong and inoffensive concepts that most people can enjoy.

"They're so rich and interesting that the hardest decisions are what to leave out, and it's always fun to experiment" Meier says. "With *Civ*, we had to pick and choose what were the most

important and fun things in the game. It kind of represented us having read history once through, skimming through it, and then putting all the highlights in without making it overly complicated."

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SourceForts

Game Half-Life 2

Web www.sourcefortsmod.com

Playing as a Garry's Mod/CTF hybrid, *Forts* pits teams against each other for some simple flag-capturing combat. The twist is that each round includes a 'Build Phase' where players use coloured blocks to build walls that impede the enemy. It can take some getting use to, but there's a special satisfaction in building your own sniper platforms and gunning down the opposition. Highly recommended for creative players and bricklayers alike.



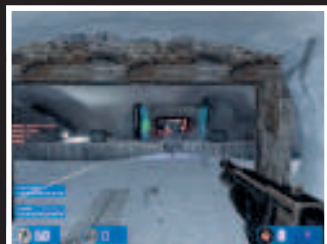
Myth and Legends: Weapons 2

Game Elder Scrolls IV: Oblivion

Web tessource.net/files/file.php?id=5902

Legends is an explorer's dream. The mod adds a selection of new and beautiful weapons – each powerful enough to impress the Fighters' Guild but not enough to unbalance the game. Every blade has then been hidden very carefully and comes with a story that must be read and deciphered to find where to search – ideal for those wanting an arsenal.

HONOURABLE MENTION



Obsidian Conflict

Game Half-Life 2

Web www.obsidianconflict.com

The first really well-known co-op mod for *Half-Life 2*, *Conflict* has an impressive array of new features. These range from cloaking modules and customisable HUDs to physics-based puzzles. Though most of these features fall by the wayside as little more than novelties (the physics puzzles are lacklustre at best) it's of no real importance – the combat is still plentiful and fast enough to keep teams level-hopping the weekend away.



MMOG Log

Holding out for a Hero

Like a 12th level rogue with a Dagger of Backstabbing, the MMOG world has been bloody and secretive recently. In Austin, Texas news continues to seep through about the highly anticipated MMORPG from BioWare – their first attempt at such a genre. While details of setting and story are still lacking, it's been reported they've licensed the HeroEngine from Simultronics, as used in *Hero's Journey*. Elsewhere, David Perry of Shiny has announced he will be working with Acclaim to make a new ad-funded game called *2Moons*, whispered to be the "most violent MMORPG yet".

Even more mysterious though is John Romero's latest activity, recruiting FPS-level designers for his new MMO, which he hopes will show *WoW* what's what. As usual, Romero is promising something 'super special' and flaunting his cash – claiming it's the "most I've ever spent on a game". Meanwhile, closer to home, *Roma Victor* developers have announced financial success too as all pre-order accounts for their realistic, Roman RPG have sold out amidst a flurry of togas – leaving dozens of deprived history buffs in their wake.



RE-RELEASES THIS MONTH

Veterans for sale



Resident Evil 3: Nemesis

Xplosiv >> £9.99

Like the zombies themselves, *Resident Evil* is the series that just won't die. With more sequels than voice talent, it's a bit long in the tooth. Whatever it's still terrifyingly fun.



Flatout

Xplosiv >> £4.99

With plenty of crash-bang-wallop, *Flatout* was regarded as a cheap *Burnout* clone. There are similarities, but the focus on arenas and special events helps add flavour to the recipe.



Richard Burns Rally

Sold Out >> £4.99

Another game with an emphasis on physics, *RBR* has replicated traditional rallying in a realistic setting. It achieves this admirably, but carries a steep learning curve.



Commandos 3: Destination Berlin

Sold Out >> £4.99

Boasting the first true 3D engine in the series's history, *Commandos 3* is a seductive delight for those wanting a hardcore challenge, but an unforgiving mistress for more casual players.



You'll find every Western cliché in the book in gunslinging *Call of Juarez*.



Conroe and Cowboys: win the ideal combination!

The best Western ever powered by the best CPU ever. What more could you possibly ask for?

We've had a blast with *Call of Juarez* this month. This is, after all, the only game we can think of that lets you quote passages from the Bible in order to strike fear into the hearts of your enemies. It's gloriously riddled



CoJ features some of the best visual effects we've seen in a long time.

with Western clichés – chasing down stagecoaches on horseback, bank robberies, high-noon quick-draws complete with tumbleweed... it's all there with one or other of the two characters: Billy, a fortune-seeker who's on the run for murder, or his preacher and ex-gunslinger uncle Ray in pursuit. Check out our review starting on page 100 for more info.

To take advantage of all the great visual effects in *CoJ* (the best depth of field ever seen, slo-mo air distortion as bullets whip by) you'll need the John Wayne of PCs. It's lucky, then we've got hold of a top-spec rig from the publishers Ascaron. Making use of the current CPU king, the Conroe Dual Core, and coupled with a gig of PC6400 RAM,

the 48-pixel pipeline Geforce 7950GX2 SLI and a whopping 250GB hard drive it's the perfect setup for *CoJ*. To win this PC and a copy of *CoJ* just answer the easy question below. **PCF**

PC SPECS

- >> **Processor** Intel Core Duo E6400 S775, 2.13GHz, 1066MHz FSB, Conroe Core 2M Cache
- >> **Memory** 1GB Corsair XMS2, DDR2 OC6400 (800), CAS 5-5-5-12
- >> **Motherboard** ASUS ASB-P5B i965
- >> **Graphics card** 1GB Gainward 7950GX2, PCI-E (x16), 1,200MHz, GPU 500MHz, 48 pipes, HDTV 2 X Dual Link DVI-I
- >> **Storage** 250GB Maxtor Diamondmax 10, SATA300 7200 RPM, 16MB Cache
- >> **PSU** 580W Hiperpower Modular
- >> **Case** Coolermaster Cavalier 3 (black)
- >> **Optical drive** Dual Layer DVD/RW

HOW TO ENTER

Answer the following question for a chance to win this fantastic prize:

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- A) A Festival of Dullards
- B) A Fistful of Dollars
- C) For a Few Dullards More

Visit www.pcformat.co.uk for instructions on how to enter.

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Overtoyou... **HAVE YOUR SAY**

Masters of disaster

When the PC gods decide the time is right for your rig to be punished, how do you deal with their wrath? We polled the *PCF* readership to find out how they avert techno-apocalypse...

92% of you will always attempt to fix a broken PC yourself, reassuringly. **5%** will call in a friend or relative to do it for them, and just three people would try to claim on their warranty.

Readers' approach to a borked PC with a screen that resolutely remained blank was extremely varied, from the somewhat over-optimistic "Turn on the monitor!! DUH" to the brainiac "remember beep pattern & turn box off. Use another machine to check POST code."

There is, however, a strict limit on just how far you'll trust a PC.

61% of respondents would refuse to fly on a plane that was piloted by a computer alone. **Too right.**

A vast majority cite hard drive failure as the worst PC disaster they've ever encountered, although "My PC crashed in the middle of a game of Counter-Strike while I was actually winning... I'll never get over that" probably didn't suffer quite as much as "When I was 11 I deleted every single .exe file on my parents' computer."

4% of folk have never installed Windows themselves. Come on in, the water's fine.

Boldly defying stereotype, 96% of you consider your PCs to be reliable – just **1%** thought theirs disaster-prone.

What's most to blame for problems with your PC? Surprise sur-fricking-prise – more than **1/2** of you deemed Windows the guiltiest of culprits, with drivers coming a distant second at **23%**.

When asked **what one PC annoyance you wish you could be rid of forever**, Windows and fan noise took the most flak. The chap who said "my wife" presumably hadn't read the question properly.

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chance to win a top-of-the-range Shuttle XPC SN25P barebones system. It supports Athlon 64, HyperTransport, and PCI Express.



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